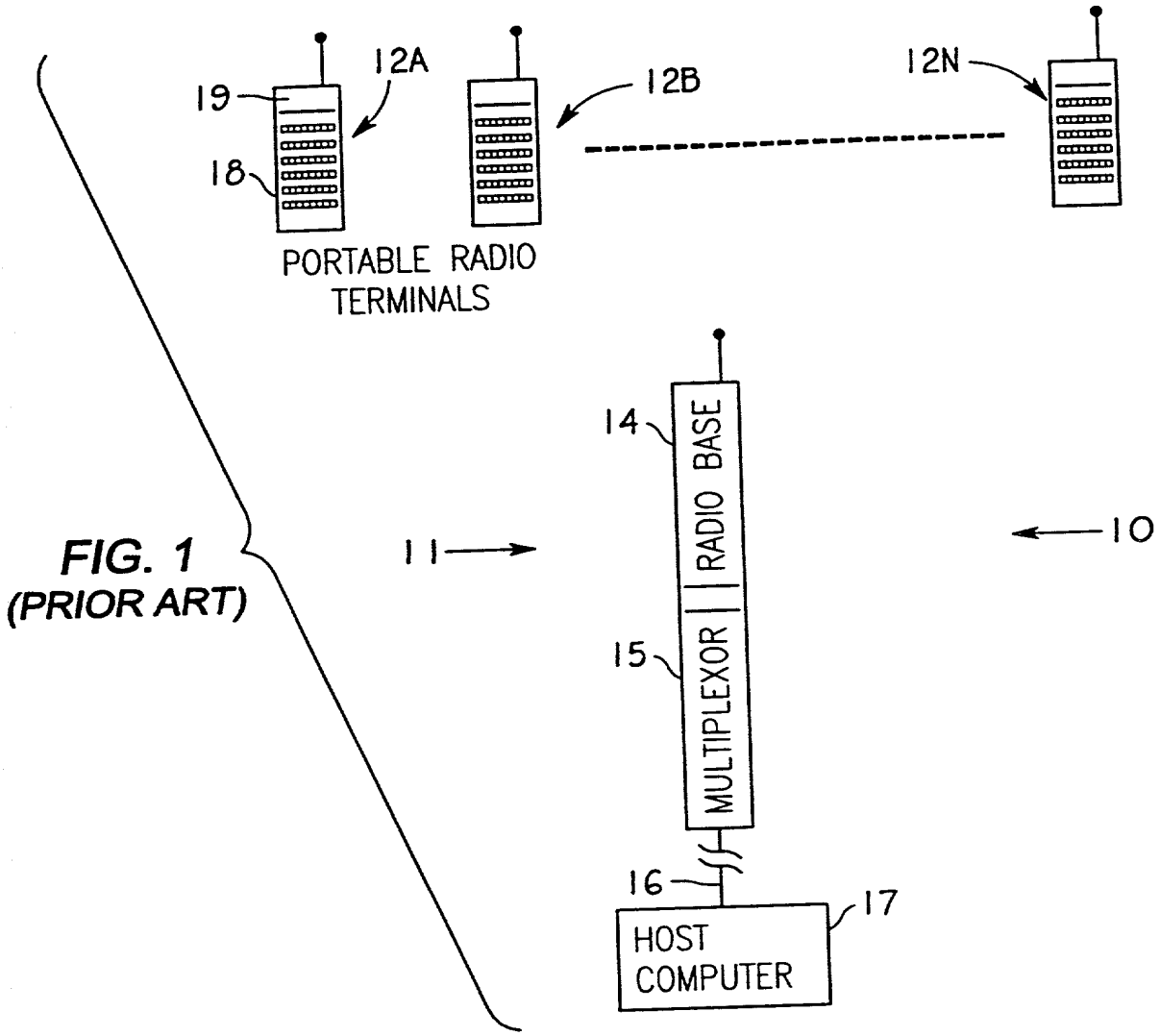


FIG. 1
(PRIOR ART)

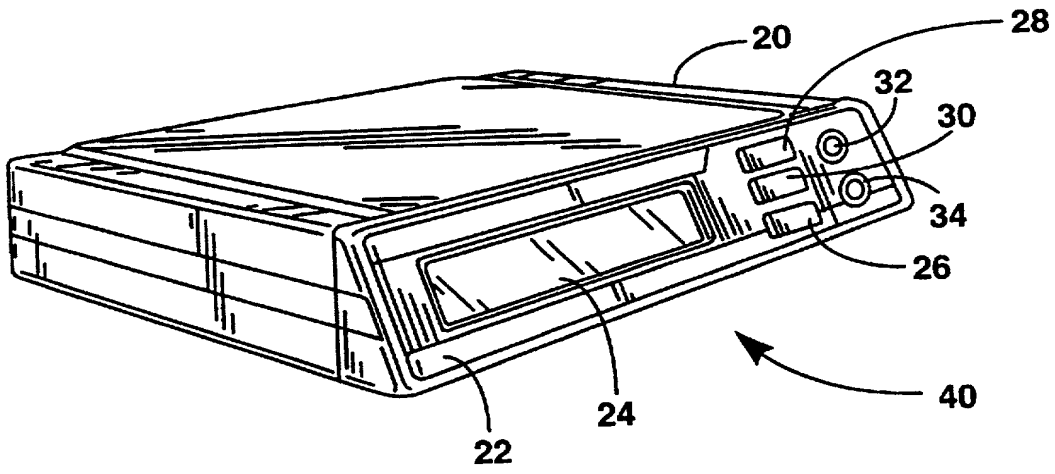


FIG. 2

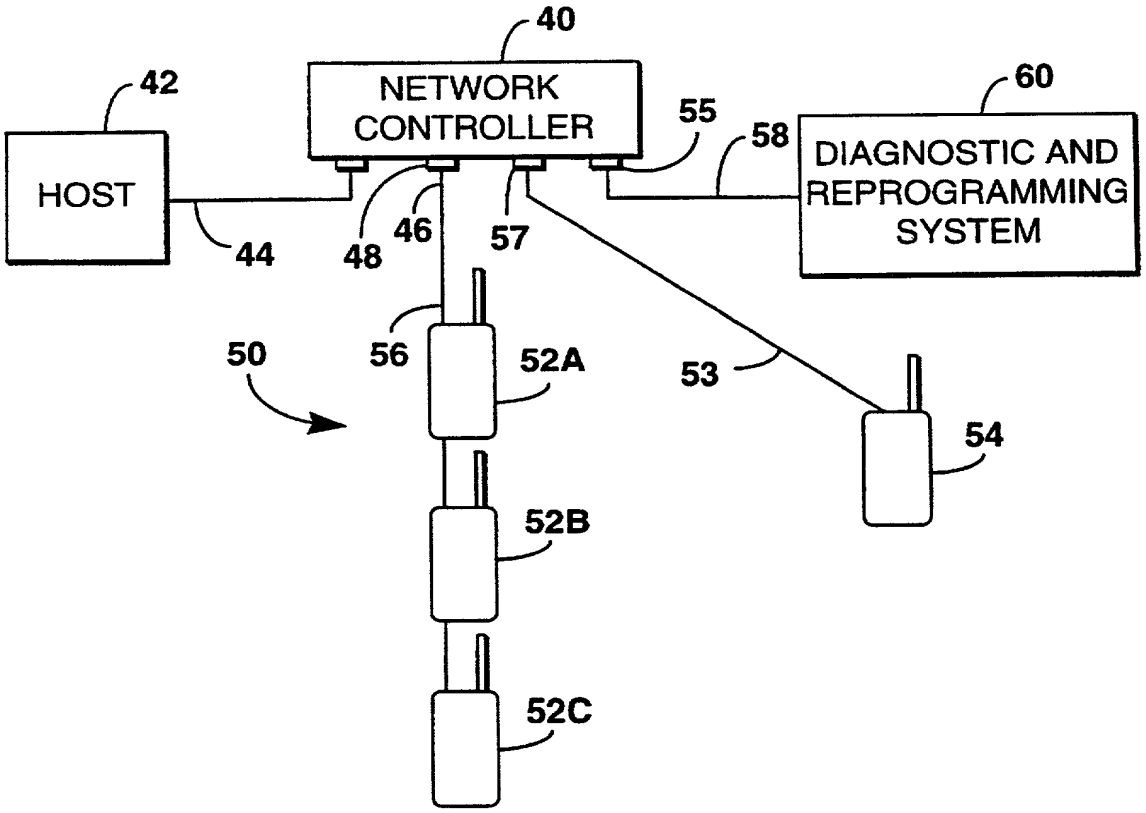

40
NETWORK CONTROLLER
42
HOST
44
48
46
57
55
58
60
DIAGNOSTIC AND REPROGRAMMING SYSTEM
50
56
52A
52B
52C
53
54

FIG. 3

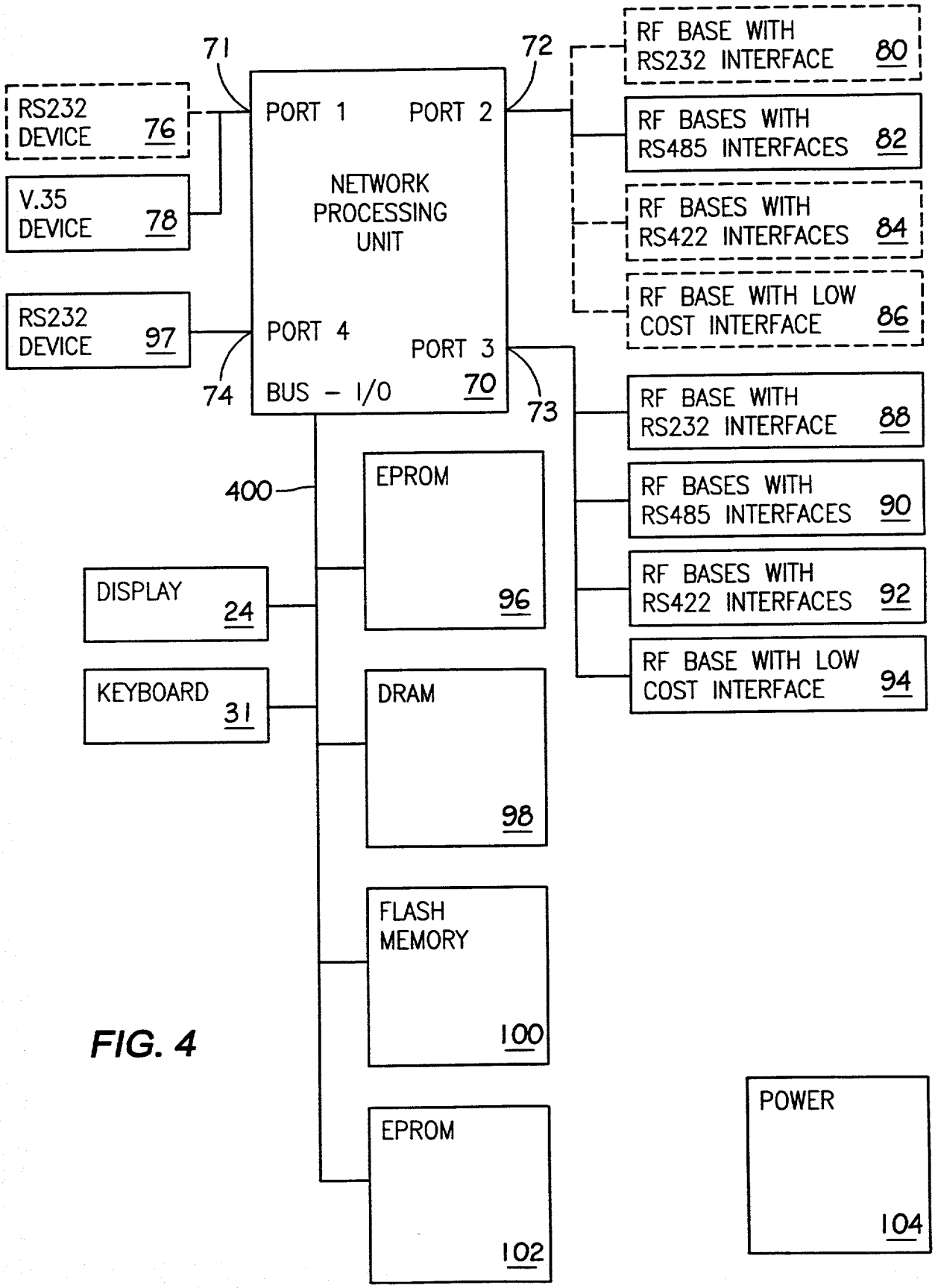

71
72
RS232 DEVICE 76
V.35 DEVICE 78
PORT 1
PORT 2
NETWORK PROCESSING UNIT
RF BASE WITH RS232 INTERFACE 80
RF BASES WITH RS485 INTERFACES 82
RF BASES WITH RS422 INTERFACES 84
RF BASE WITH LOW COST INTERFACE 86
RS232 DEVICE 97
PORT 4
PORT 3
74
BUS - I/O 70
73
RF BASE WITH RS232 INTERFACE 88
400
EPROM 96
RF BASES WITH RS485 INTERFACES 90
DISPLAY 24
RF BASES WITH RS422 INTERFACES 92
KEYBOARD 31
RF BASE WITH LOW COST INTERFACE 94
DRAM 98
FLASH MEMORY 100
EPROM 102
POWER 104

FIG. 4

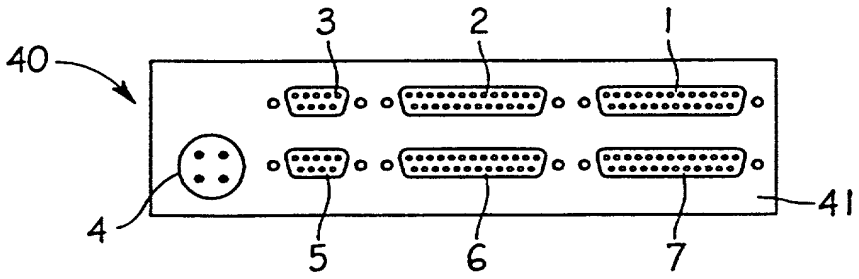


FIG. 5

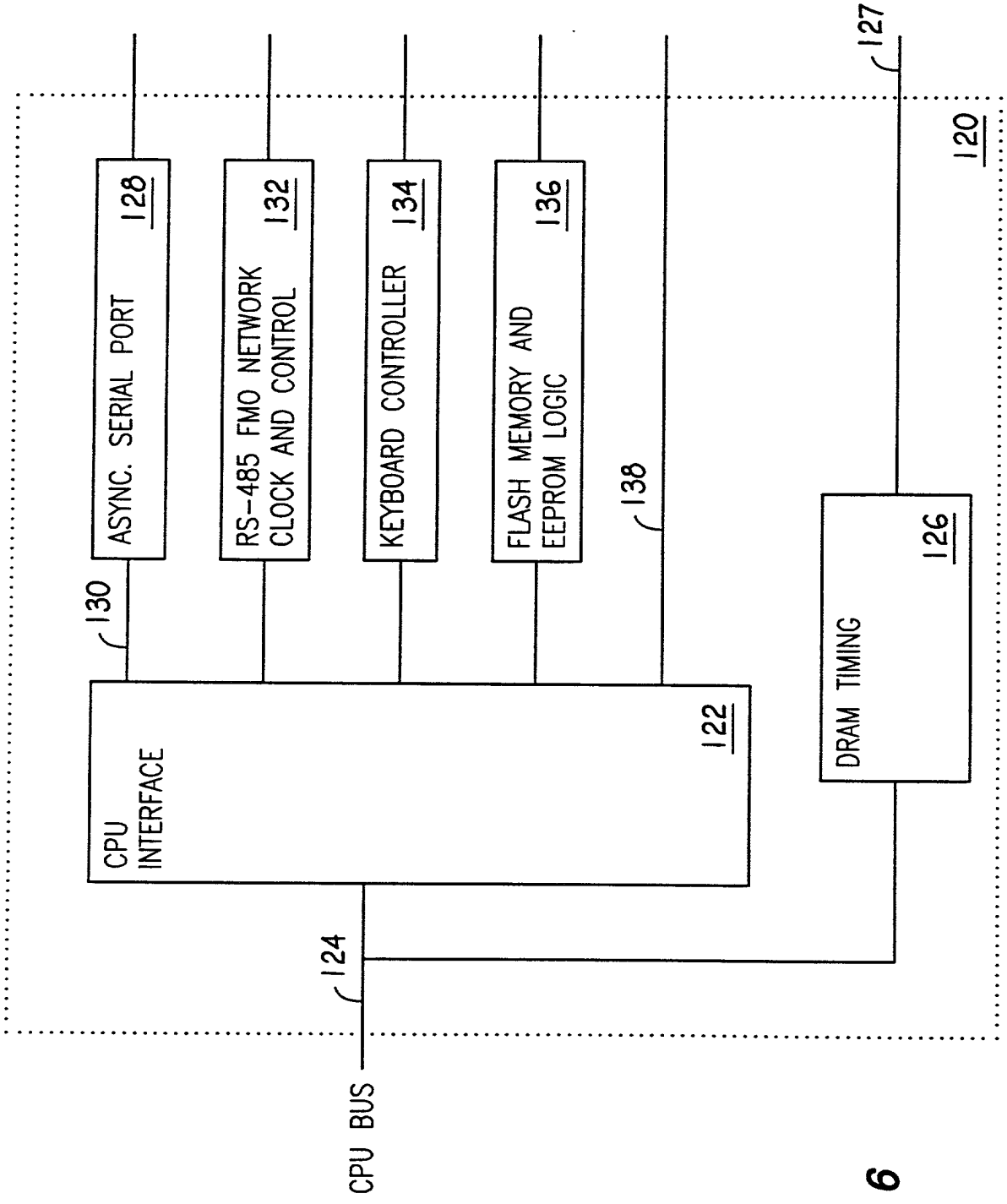

ASYNC. SERIAL PORT
128
RS-485 FMO NETWORK
CLOCK AND CONTROL
132
KEYBOARD CONTROLLER
134
FLASH MEMORY AND
EEPROM LOGIC
136
138
130
CPU
INTERFACE
122
DRAM TIMING
126
127
120
124
CPU BUS

FIG. 6

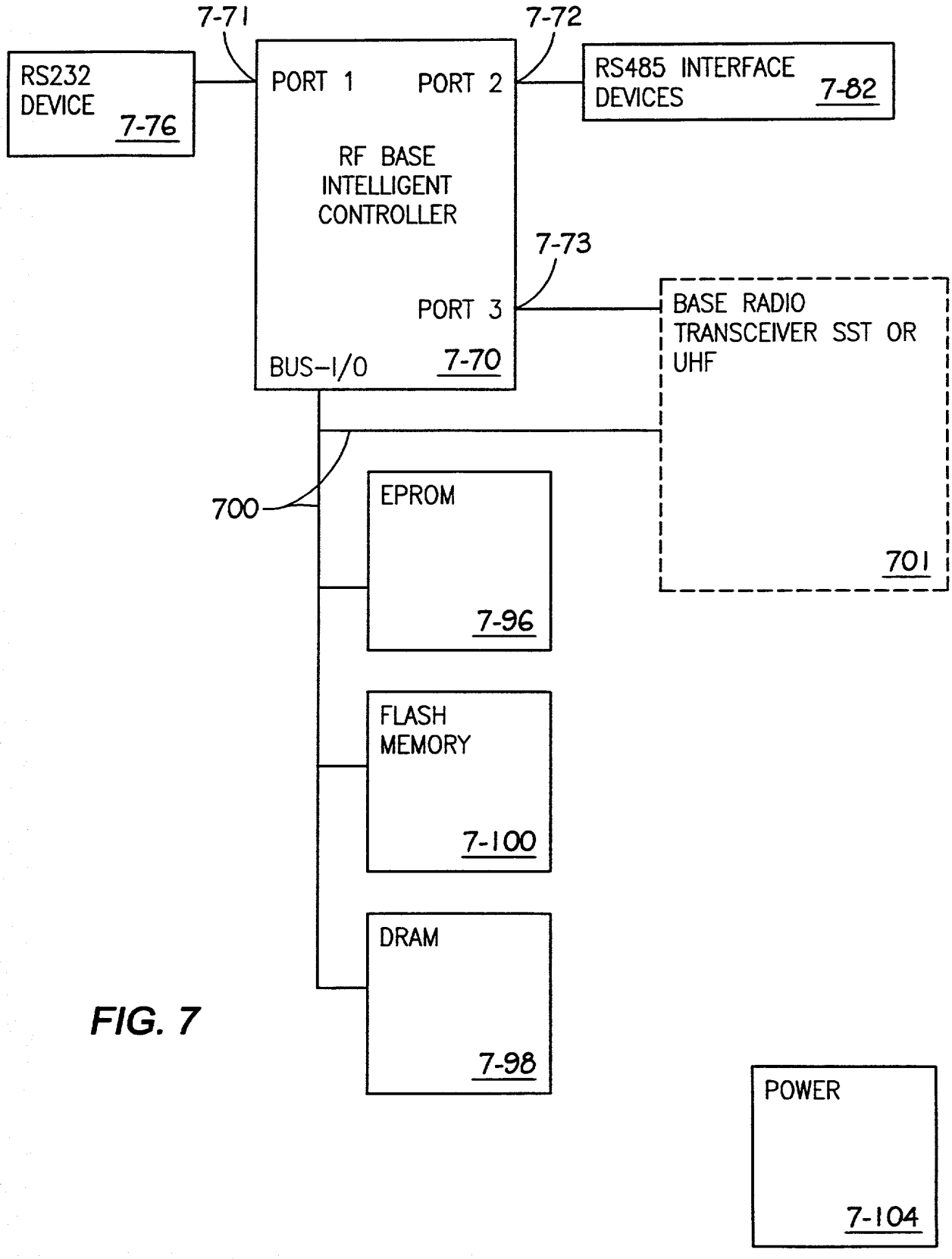

7-71
7-72
RS232
DEVICE
7-76
PORT 1
PORT 2
RS485 INTERFACE
DEVICES
7-82
RF BASE
INTELLIGENT
CONTROLLER
7-73
PORT 3
BUS-I/O
7-70
BASE RADIO
TRANSCEIVER SST OR
UHF
700
EPROM
7-96
701
FLASH
MEMORY
7-100
DRAM
7-98
POWER
7-104

FIG. 7

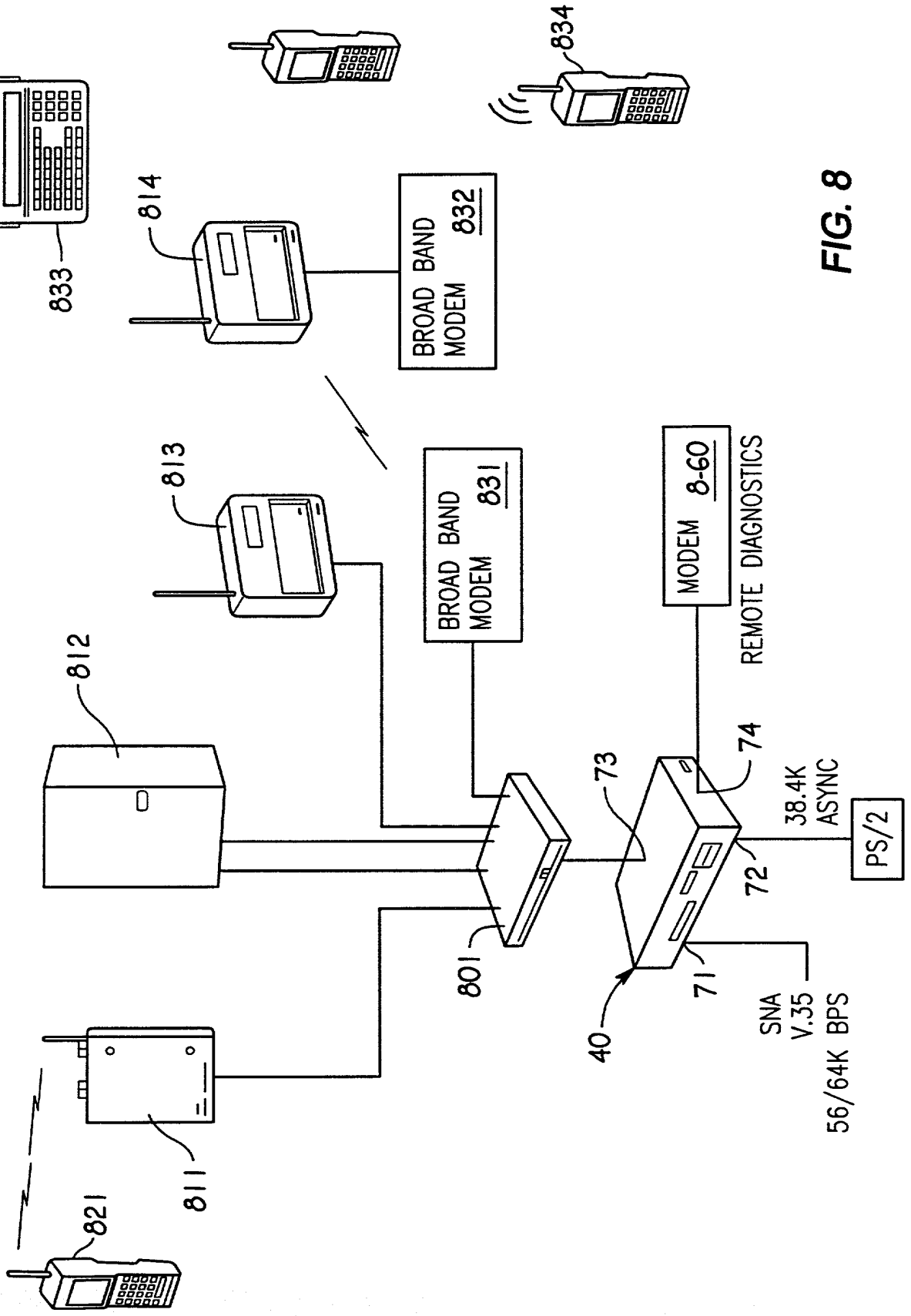

834
833
814
BROAD BAND MODEM 832
813
BROAD BAND MODEM 831
MODEM 8-60
REMOTE DIAGNOSTICS
812
74
73
38.4K ASYNC
PS/2
72
801
71
40
SNA V.35 56/64K BPS
811
821

FIG. 8

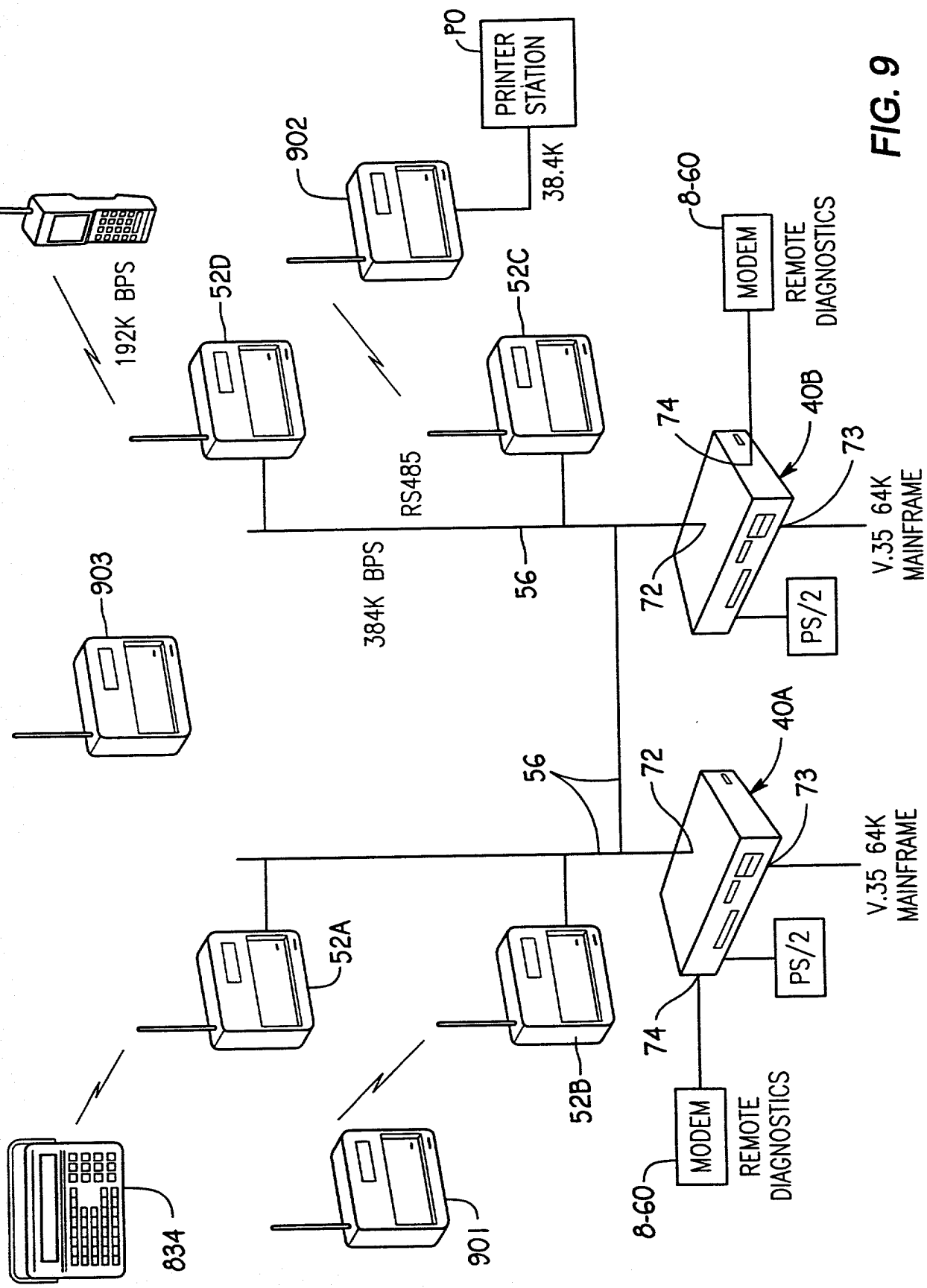

PRINTER STATION
P0
902
38.4K
8-60
MODEM
REMOTE DIAGNOSTICS
192K BPS
52D
52C
RS485
74
40B
73
V.35 64K MAINFRAME
384K BPS
56
72
PS/2
903
56
72
40A
73
V.35 64K MAINFRAME
52A
52B
74
PS/2
834
901
8-60
MODEM
REMOTE DIAGNOSTICS

FIG. 9

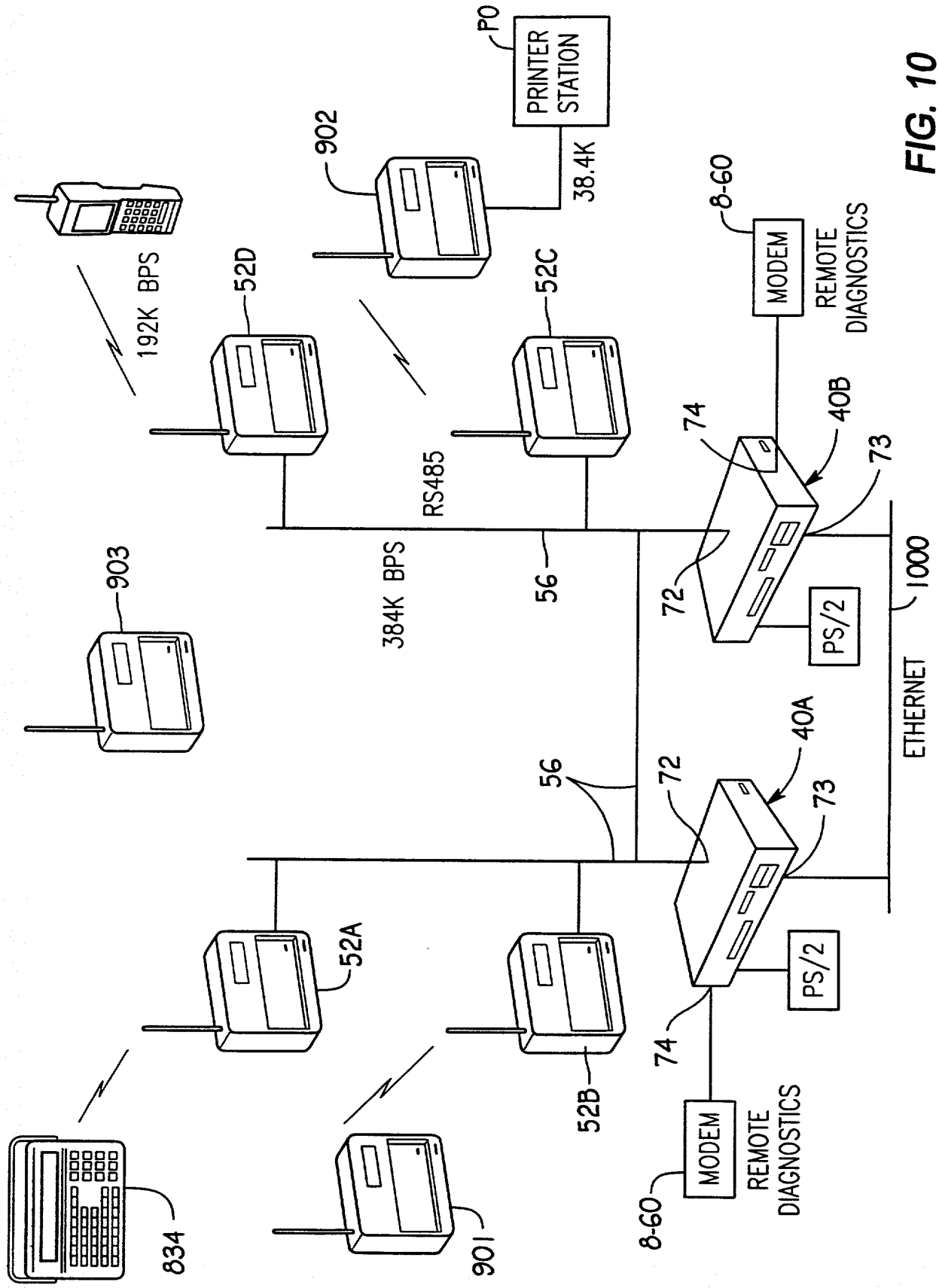

P0
PRINTER STATION
902
38.4K
8-60
MODEM
REMOTE DIAGNOSTICS
192K BPS
52D
52C
74
40B
73
RS485
384K BPS
56
72
903
PS/2
1000
ETHERNET
56
72
40A
73
52A
52B
74
PS/2
834
901
8-60
MODEM
REMOTE DIAGNOSTICS

FIG. 10

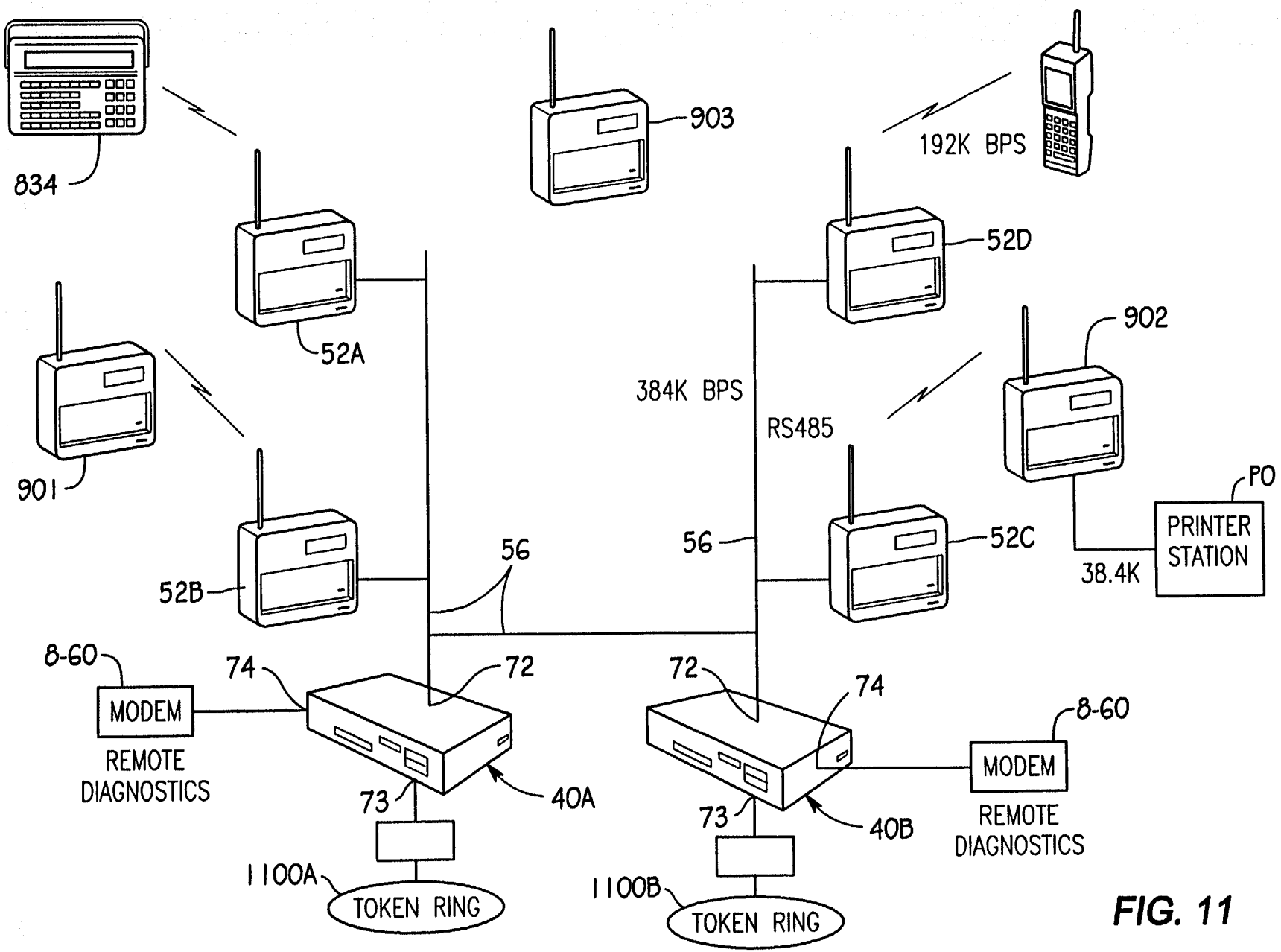

834
903
192K BPS
52A
52D
902
901
384K BPS
RS485
52B
56
56
52C
PO
PRINTER STATION
38.4K
8-60
MODEM
REMOTE DIAGNOSTICS
74
72
72
74
8-60
MODEM
REMOTE DIAGNOSTICS
73
40A
73
40B
1100A
TOKEN RING
1100B
TOKEN RING

FIG. 11

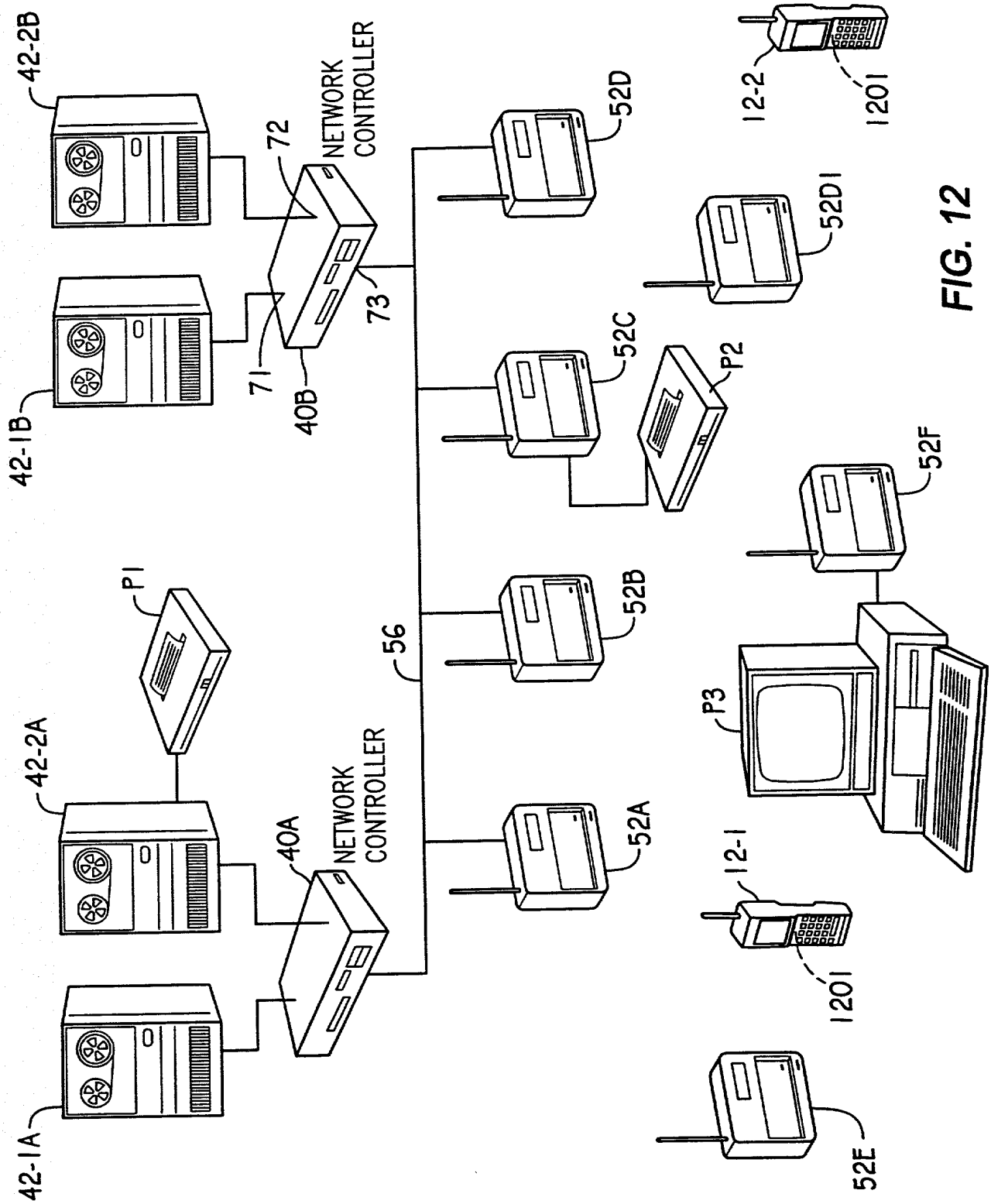

42-2B
42-1B
72
NETWORK CONTROLLER
71
40B
73
52D
52D1
12-2
1201
52C
P2
52F
P1
42-2A
56
52B
P3
40A
NETWORK CONTROLLER
52A
12-1
1201
42-1A
52E

FIG. 12

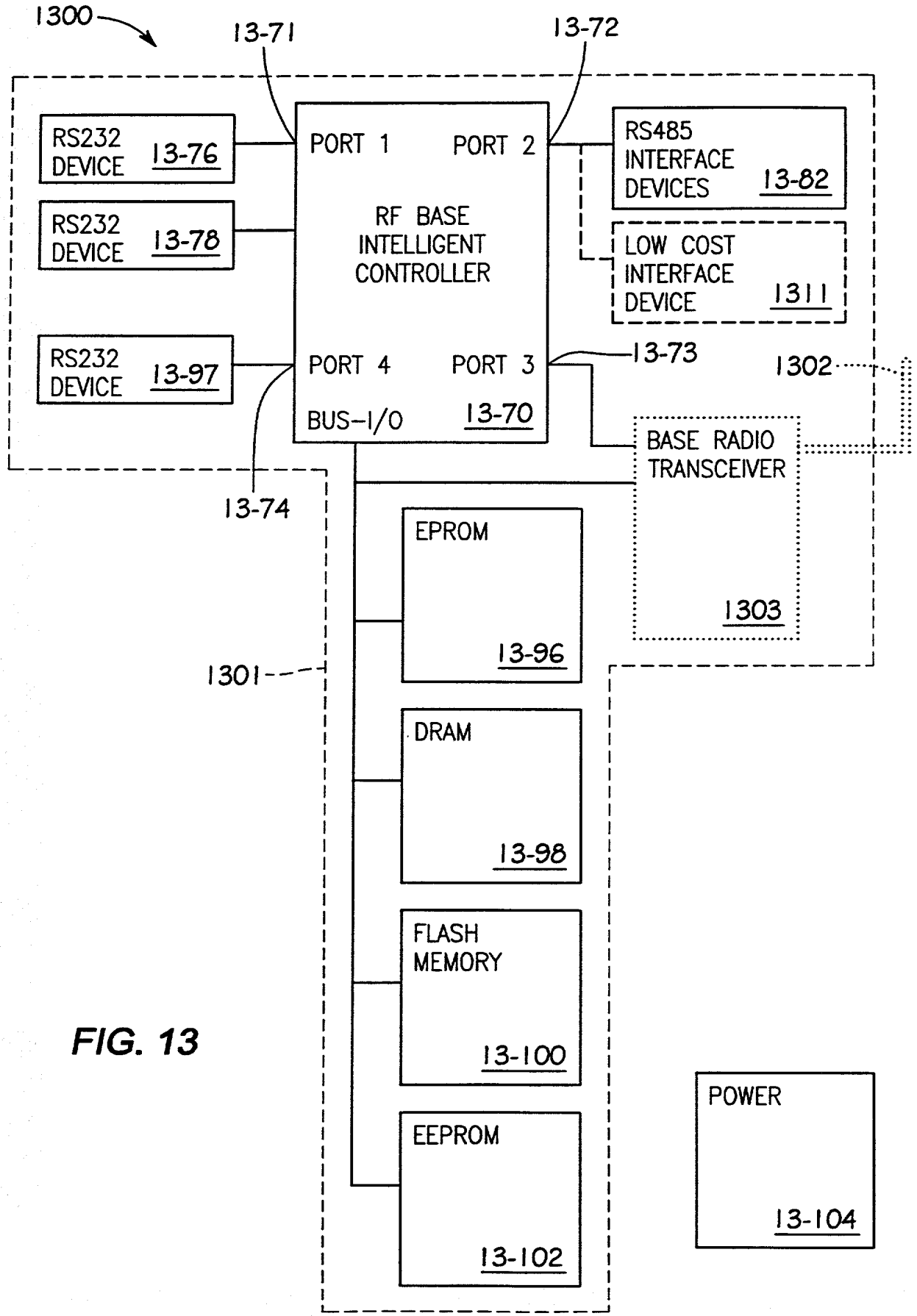

1300
13-71
13-72
RS232 DEVICE 13-76
RS232 DEVICE 13-78
RS232 DEVICE 13-97
PORT 1
PORT 2
RF BASE INTELLIGENT CONTROLLER
PORT 4
PORT 3
BUS-I/O 13-70
13-73
13-74
RS485 INTERFACE DEVICES 13-82
LOW COST INTERFACE DEVICE 1311
1302
BASE RADIO TRANSCEIVER 1303
EPROM 13-96
DRAM 13-98
FLASH MEMORY 13-100
EEPROM 13-102
1301
POWER 13-104

FIG. 13

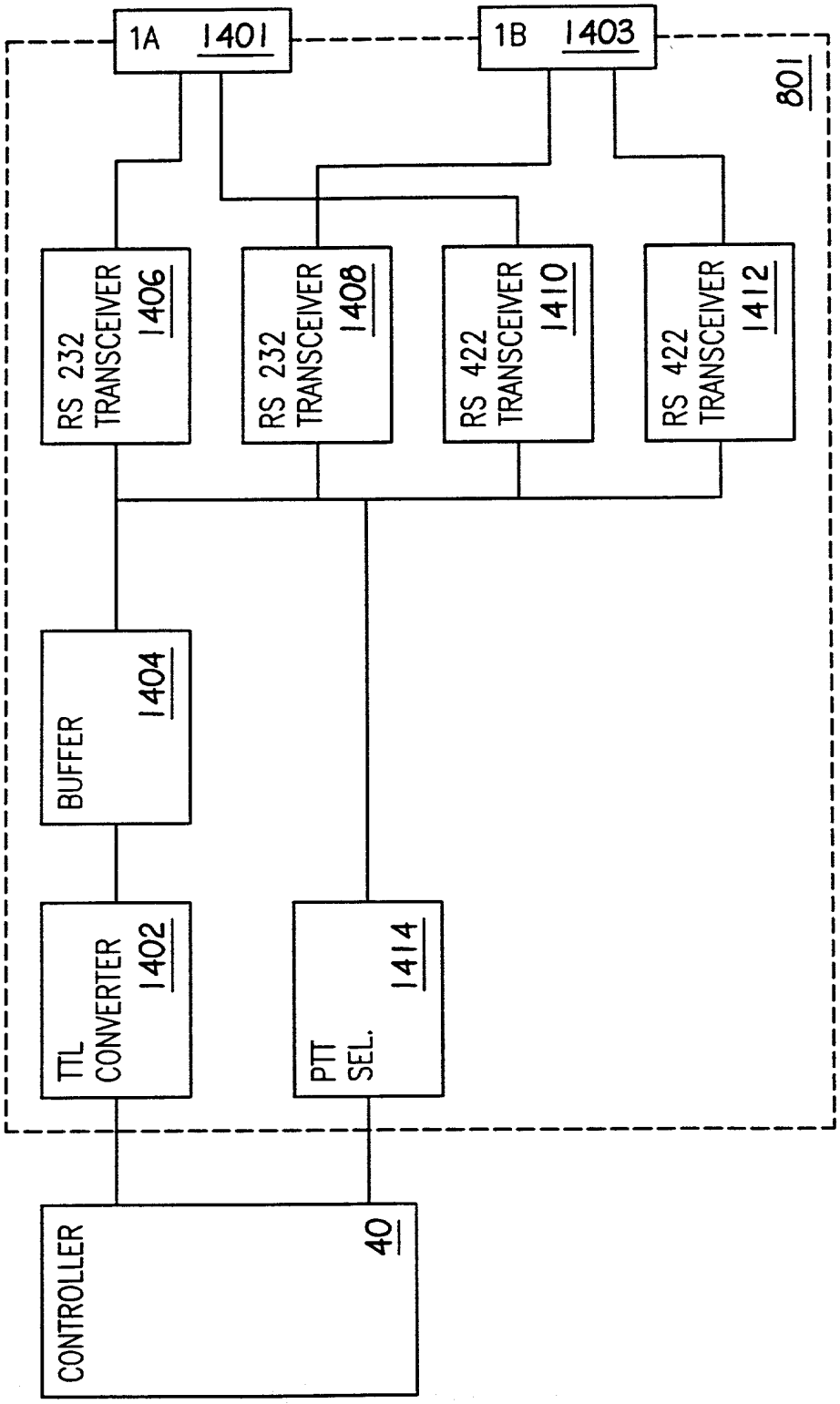

1A 1401
1B 1403
801
RS 232 TRANSCEIVER 1406
RS 232 TRANSCEIVER 1408
RS 422 TRANSCEIVER 1410
RS 422 TRANSCEIVER 1412
BUFFER 1404
TTL CONVERTER 1402
PTT SEL. 1414
CONTROLLER 40

FIG. 14

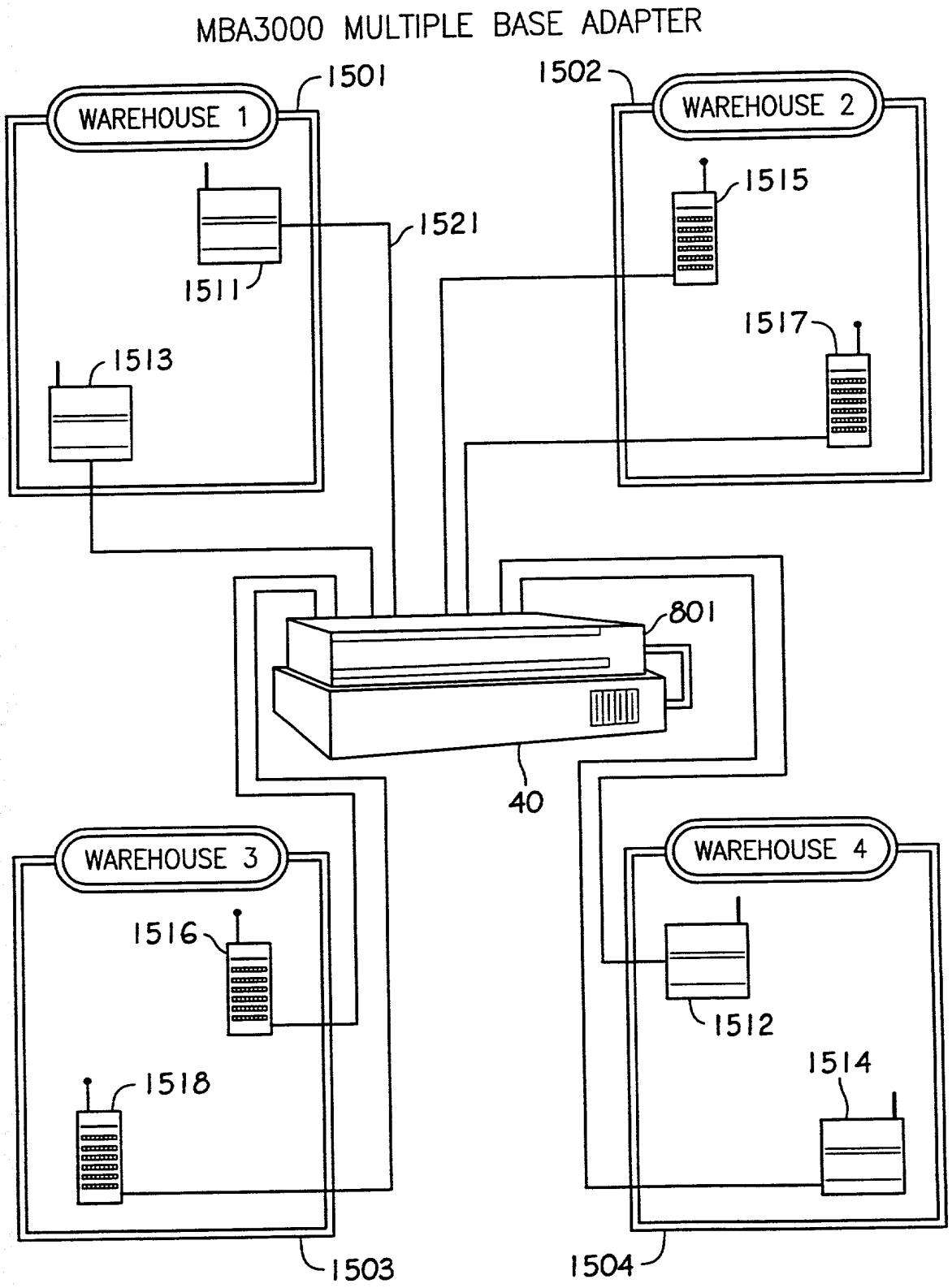

MBA3000 MULTIPLE BASE ADAPTER
WAREHOUSE 1
1501
1511
1513
1521
WAREHOUSE 2
1502
1515
1517
801
40
WAREHOUSE 3
1516
1518
1503
WAREHOUSE 4
1512
1514
1504

FIG. 15

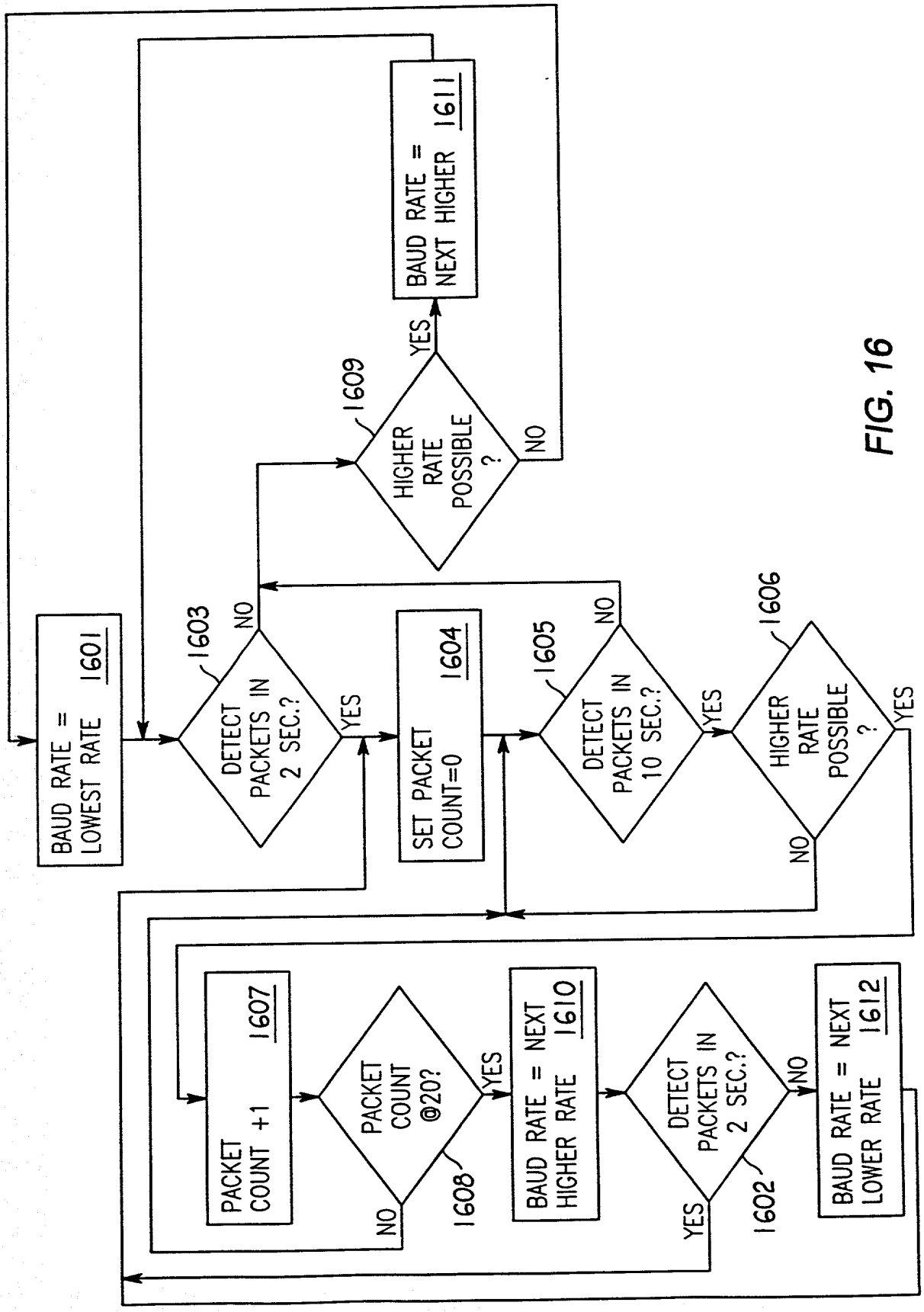

BAUD RATE = LOWEST RATE 1601
DETECT PACKETS IN 2 SEC.? 1603
NO
YES
SET PACKET COUNT=0 1604
DETECT PACKETS IN 10 SEC.? 1605
NO
YES
HIGHER RATE POSSIBLE ? 1606
NO
YES
HIGHER RATE POSSIBLE ? 1609
YES
NO
BAUD RATE = NEXT HIGHER 1611
PACKET COUNT +1 1607
PACKET COUNT @20? 1608
NO
YES
BAUD RATE = NEXT HIGHER RATE 1610
DETECT PACKETS IN 2 SEC.? 1602
YES
NO
BAUD RATE = NEXT LOWER RATE 1612

FIG. 16

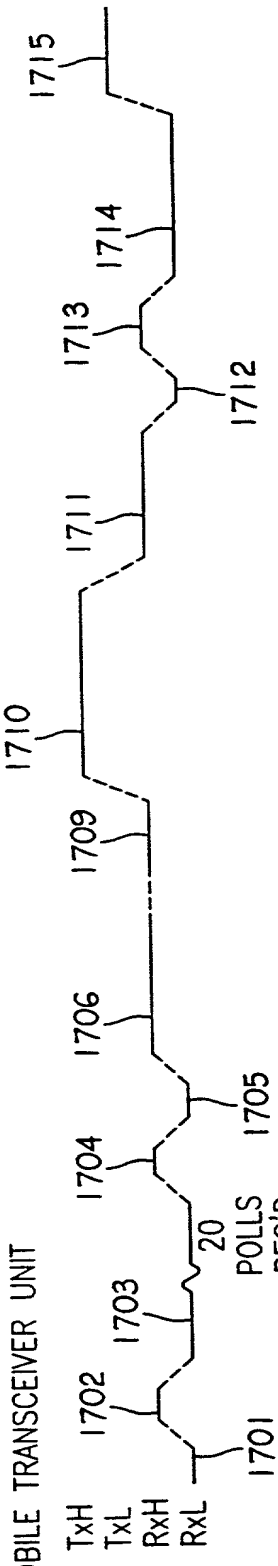

MOBILE TRANSCEIVER UNIT
TxH
TxL
RxH
RxL
1701
1702
1703
20
POLLS
REC'D
1704
1705
1706
1709
1710
1711
1712
1713
1714
1715

FIG. 17

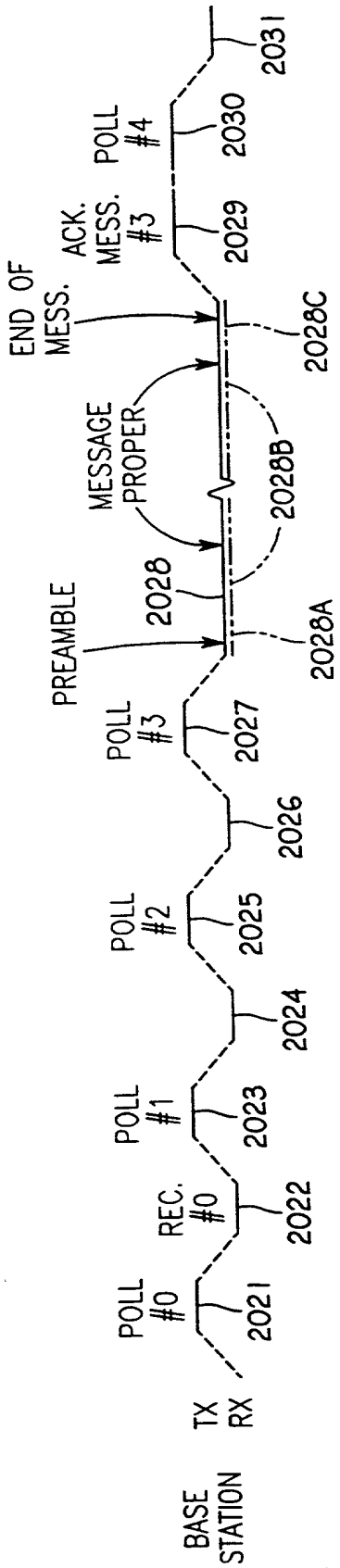

BASE
STATION
TX
RX
POLL
#0
2021
REC.
#0
2022
POLL
#1
2023
2024
POLL
#2
2025
2026
POLL
#3
2027
PREAMBLE
2028
2028A
MESSAGE
PROPER
2028B
END OF
MESS.
2028C
ACK.
MESS.
#3
2029
POLL
#4
2030
2031

FIG. 18

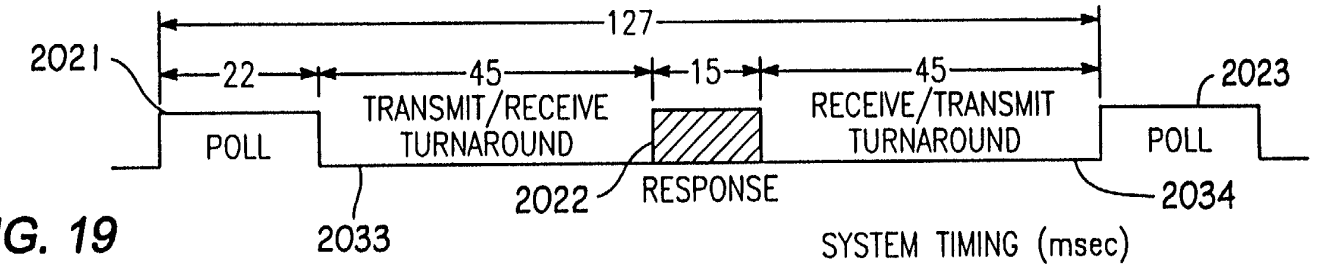


FIG. 19
(PRIOR ART)

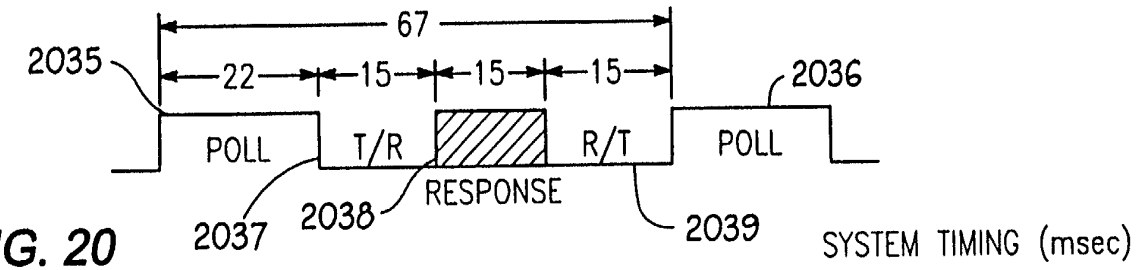


FIG. 20
(PRIOR ART)

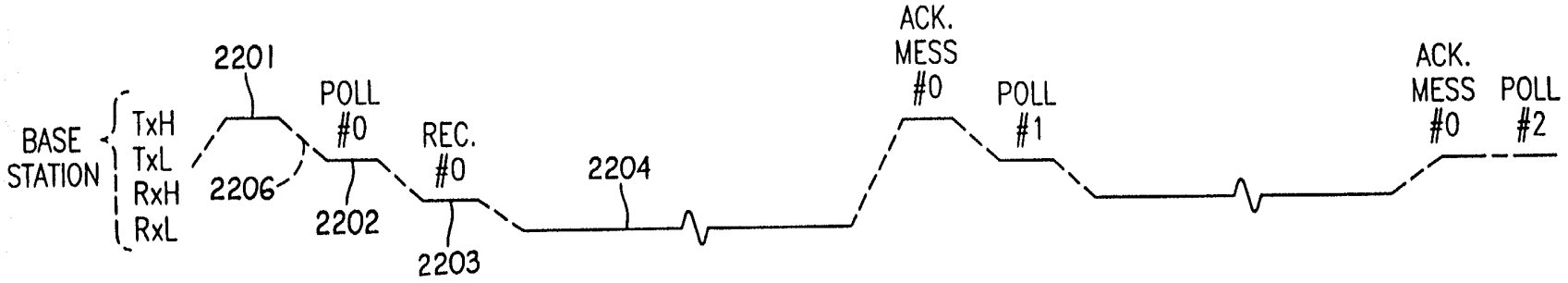


FIG. 33

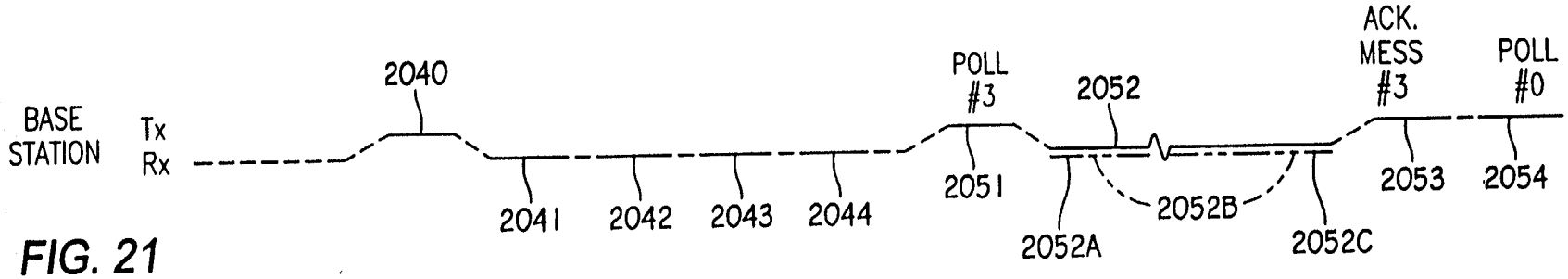


FIG. 21

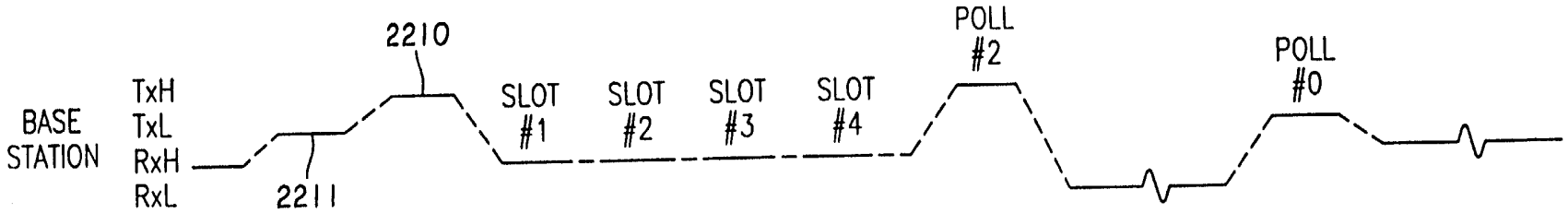


FIG. 34

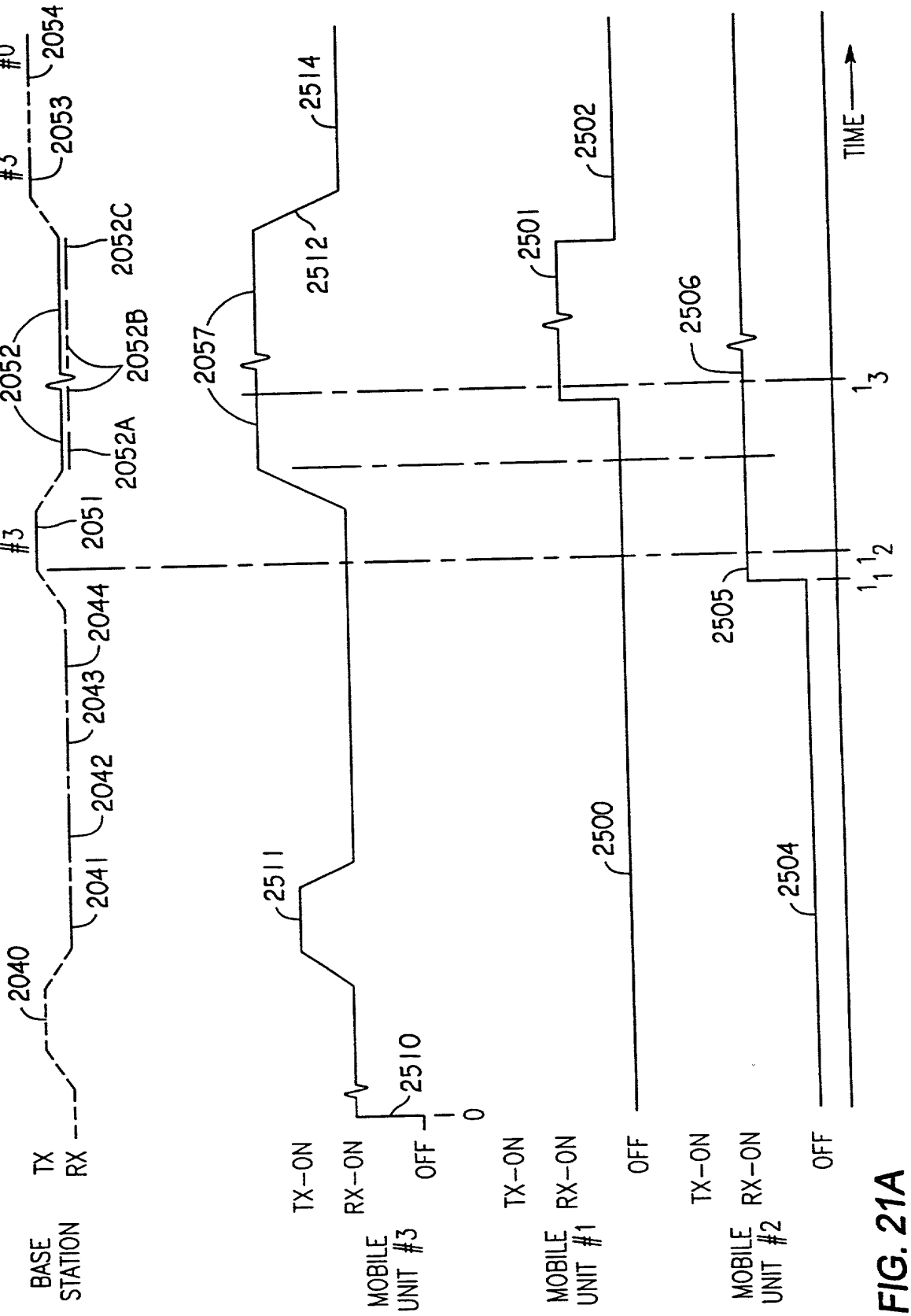

BASE STATION
TX
RX
MOBILE UNIT #3
TX-ON
RX-ON
OFF
MOBILE UNIT #1
TX-ON
RX-ON
OFF
MOBILE UNIT #2
TX-ON
RX-ON
OFF
TIME
POLL #3
ACK. MESS. #3
POLL #0
2040
2041
2042
2043
2044
2051
2052
2052A
2052B
2052C
2053
2054
2057
2500
2501
2502
2504
2505
2506
2510
2511
2512
2514
0
1_1
1_2
1_3

FIG. 21A

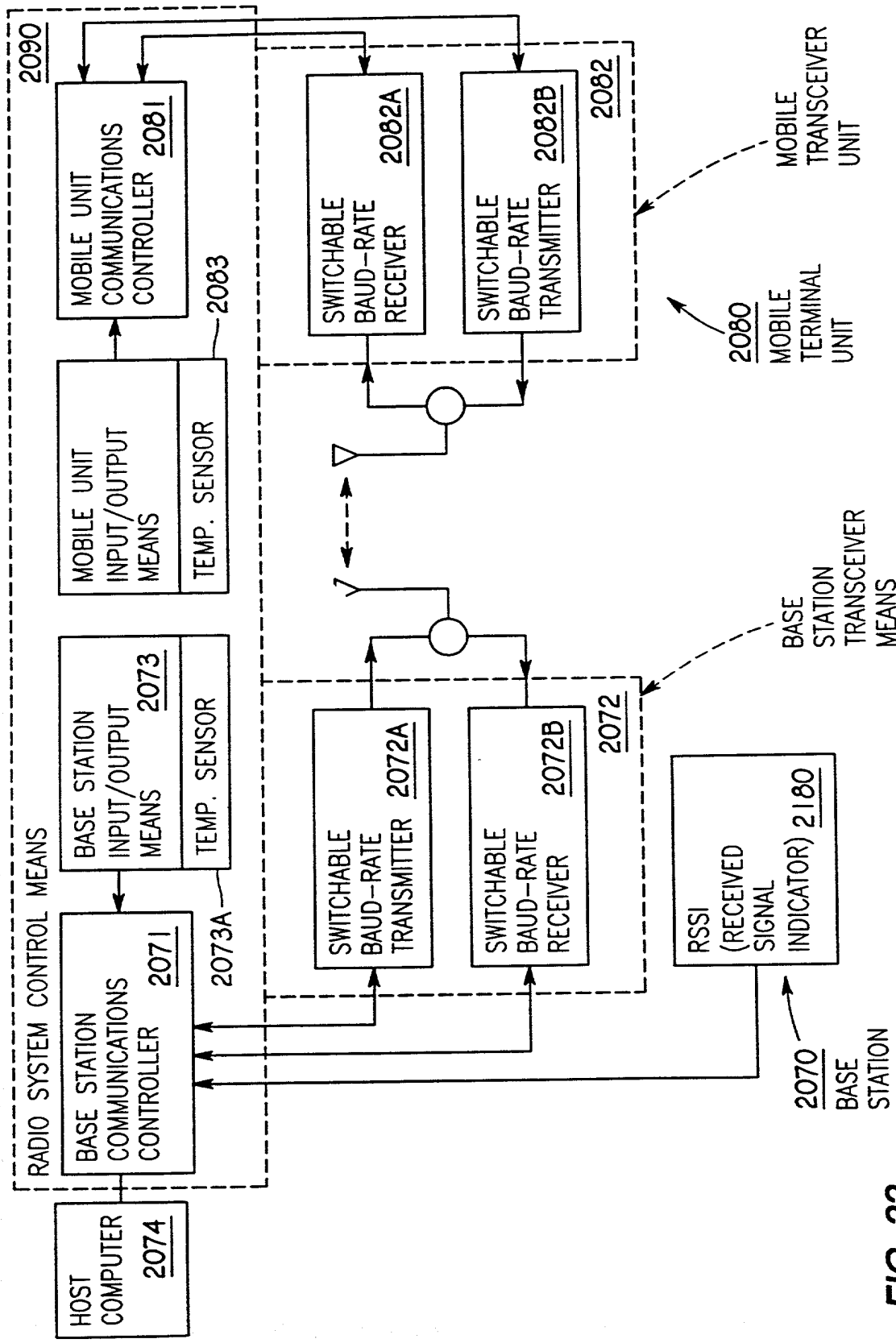

2090
RADIO SYSTEM CONTROL MEANS
MOBILE UNIT COMMUNICATIONS CONTROLLER 2081
MOBILE UNIT INPUT/OUTPUT MEANS
TEMP. SENSOR
2083
SWITCHABLE BAUD-RATE RECEIVER 2082A
SWITCHABLE BAUD-RATE TRANSMITTER 2082B
2082
MOBILE TRANSCEIVER UNIT
2080 MOBILE TERMINAL UNIT
BASE STATION INPUT/OUTPUT MEANS 2073
TEMP. SENSOR
2073A
BASE STATION COMMUNICATIONS CONTROLLER 2071
SWITCHABLE BAUD-RATE TRANSMITTER 2072A
SWITCHABLE BAUD-RATE RECEIVER 2072B
2072
BASE STATION TRANSCEIVER MEANS
RSSI (RECEIVED SIGNAL INDICATOR) 2180
2070 BASE STATION
HOST COMPUTER 2074

FIG. 22

FIG. 23

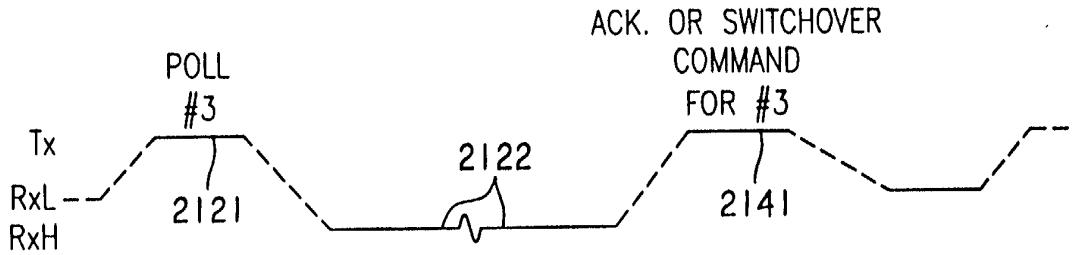


FIG. 24

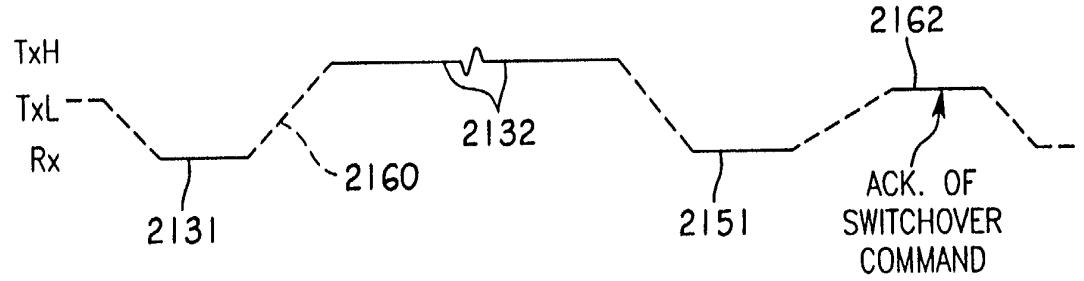


FIG. 27

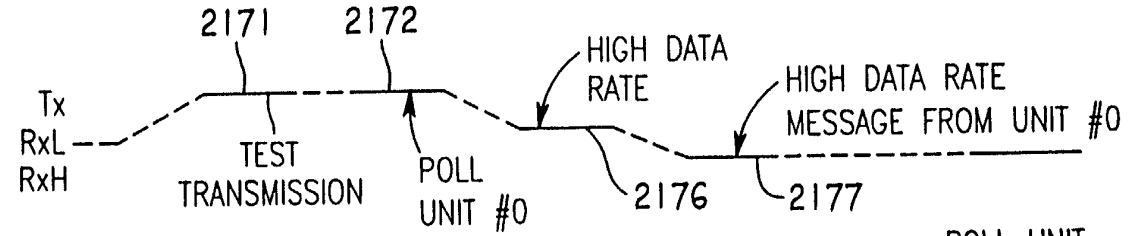


FIG. 28

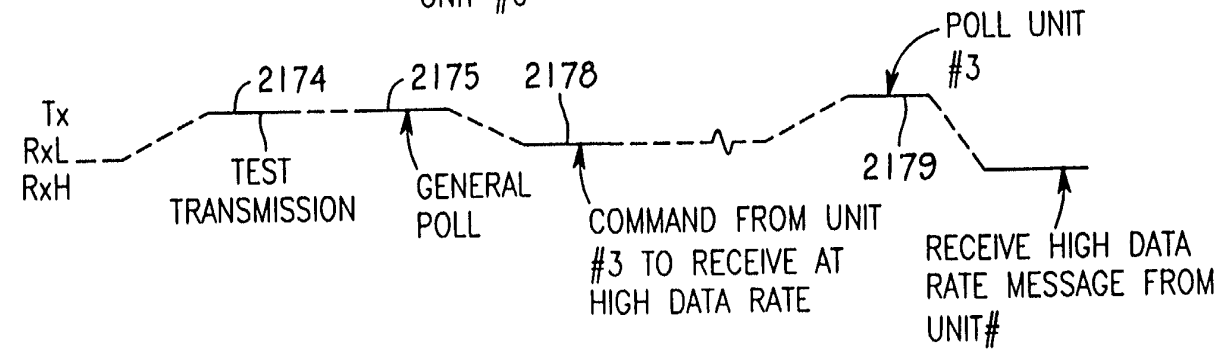
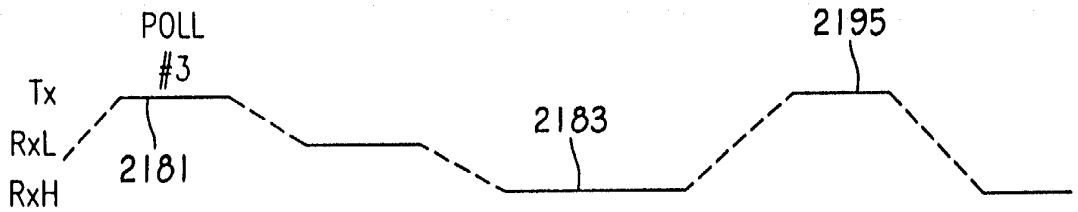
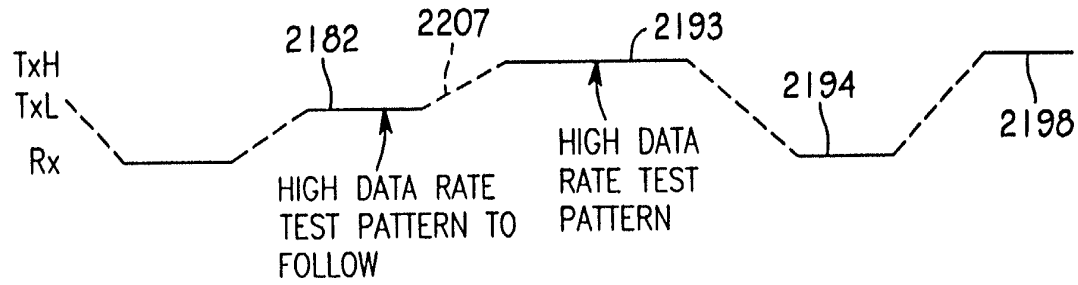


FIG. 31



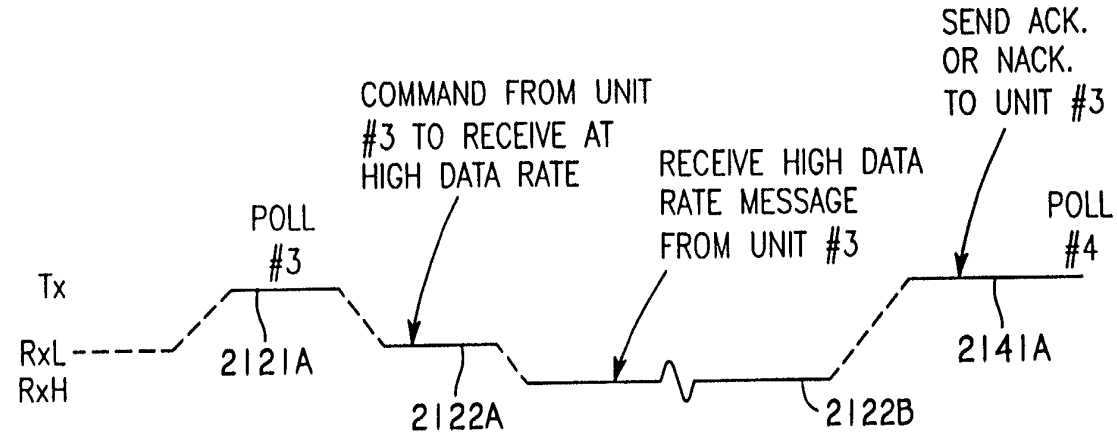
BASE STATION

FIG. 32



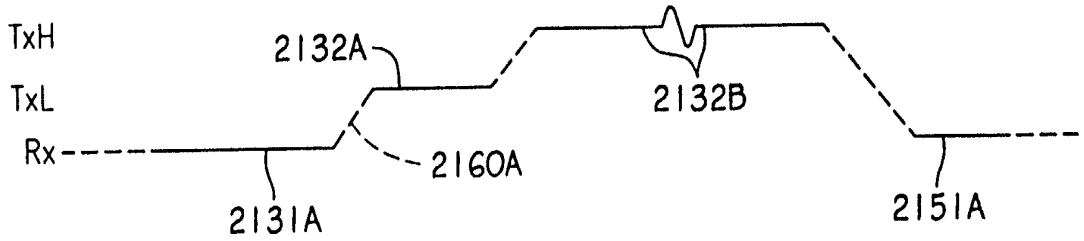
MOBILE UNIT #3 (IN LOW DATA RATE MODE)

FIG. 25



BASE STATION

FIG. 26



MOBILE UNIT #3

FIG. 29

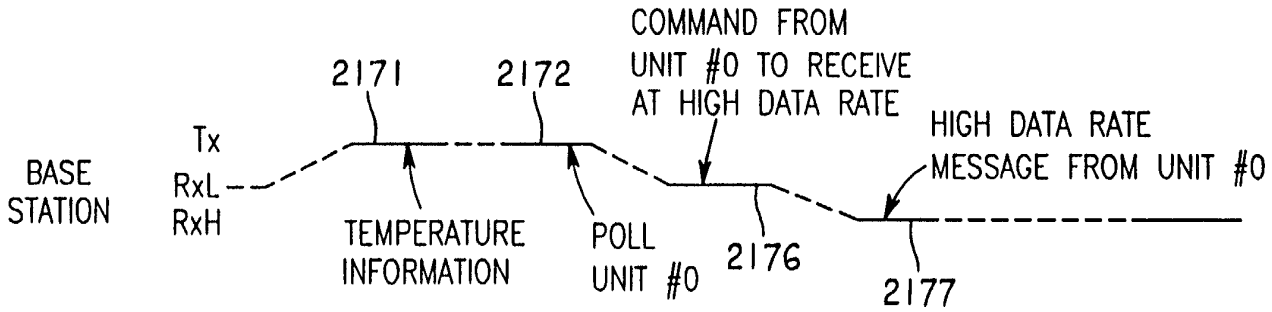
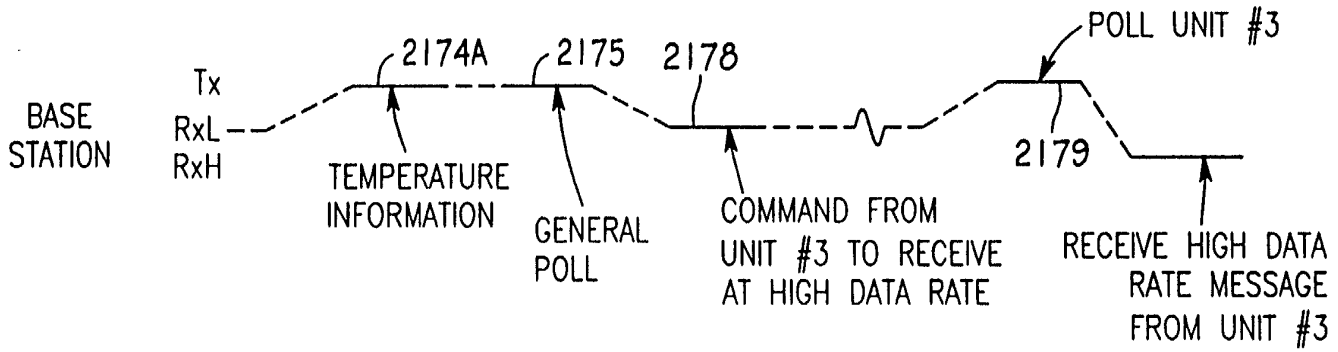

BASE STATION
Tx
RxL
RxH
2171
2172
COMMAND FROM UNIT #0 TO RECEIVE AT HIGH DATA RATE
HIGH DATA RATE MESSAGE FROM UNIT #0
TEMPERATURE INFORMATION
POLL UNIT #0
2176
2177

FIG. 30


BASE STATION
Tx
RxL
RxH
2174A
2175
2178
POLL UNIT #3
2179
TEMPERATURE INFORMATION
GENERAL POLL
COMMAND FROM UNIT #3 TO RECEIVE AT HIGH DATA RATE
RECEIVE HIGH DATA RATE MESSAGE FROM UNIT #3

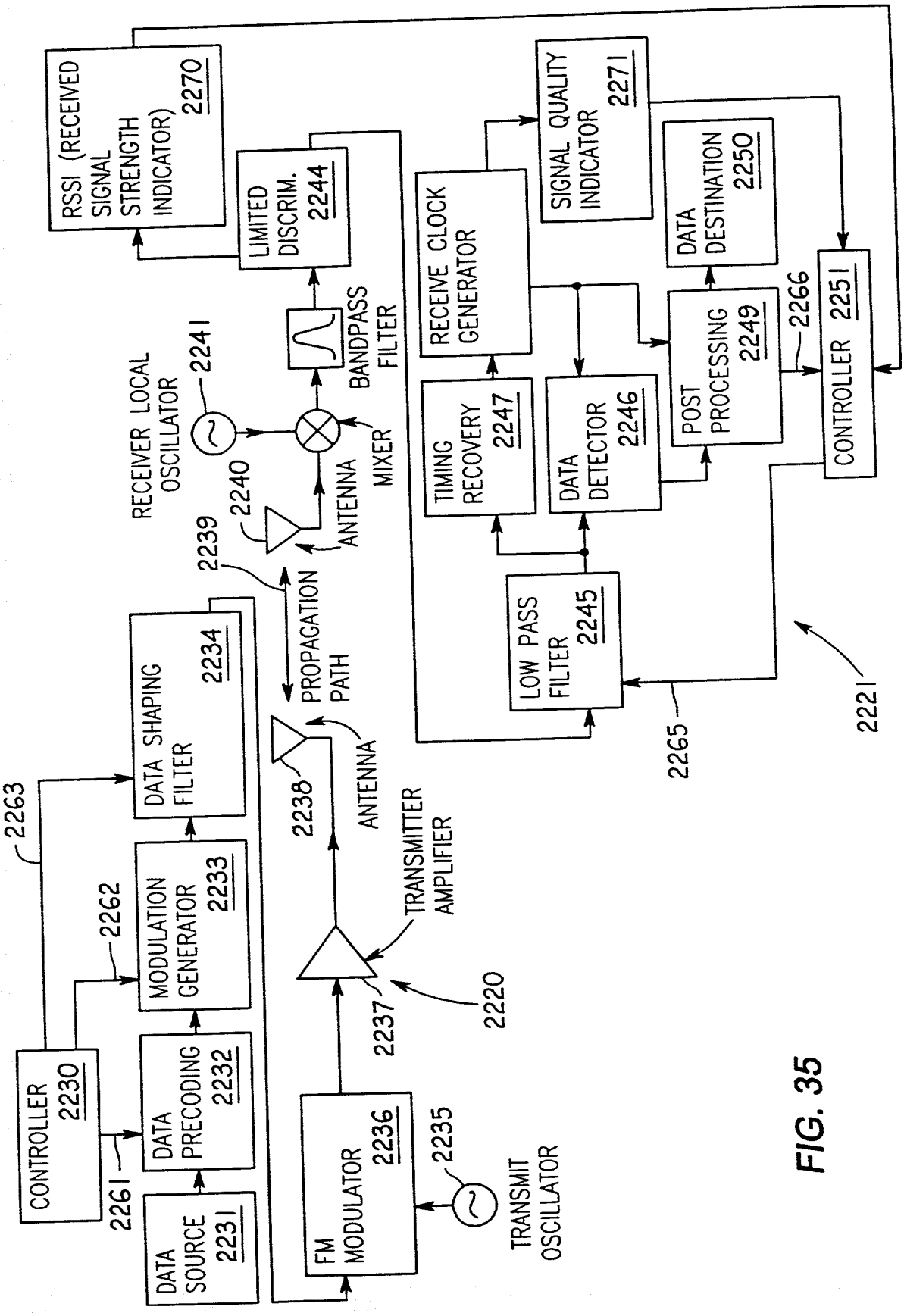

RSSI (RECEIVED SIGNAL STRENGTH INDICATOR) 2270
LIMITED DISCRIM. 2244
BANDPASS FILTER
RECEIVER LOCAL OSCILLATOR 2241
2240
ANTENNA
MIXER
2239
PROPAGATION PATH
RECEIVE CLOCK GENERATOR
SIGNAL QUALITY INDICATOR 2271
DATA DESTINATION 2250
TIMING RECOVERY 2247
DATA DETECTOR 2246
POST PROCESSING 2249
2266
CONTROLLER 2251
LOW PASS FILTER 2245
2265
2221
2263
DATA SHAPING FILTER 2234
2262
MODULATION GENERATOR 2233
2238
ANTENNA
TRANSMITTER AMPLIFIER
CONTROLLER 2230
DATA PRECODING 2232
2261
2237
2220
DATA SOURCE 2231
FM MODULATOR 2236
2235
TRANSMIT OSCILLATOR

FIG. 35

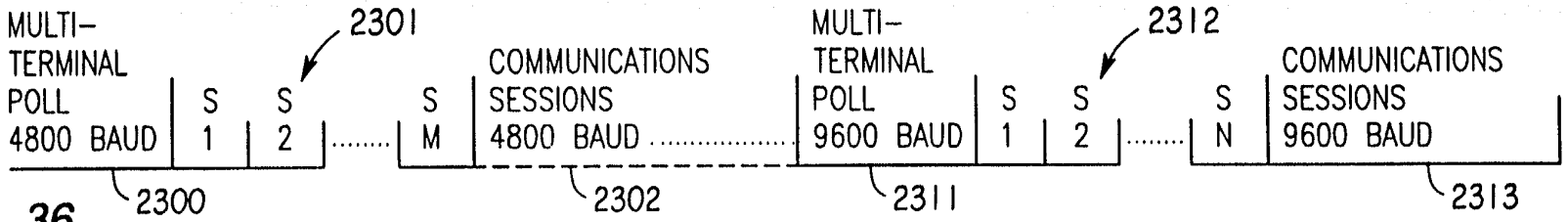


FIG. 36

FIG. 37

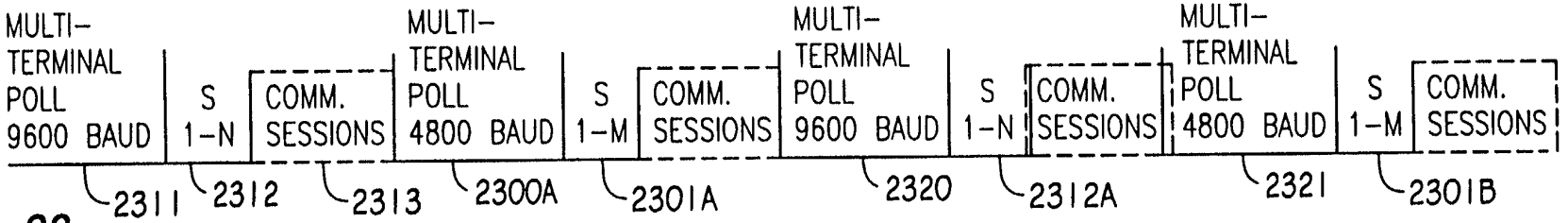


FIG. 38

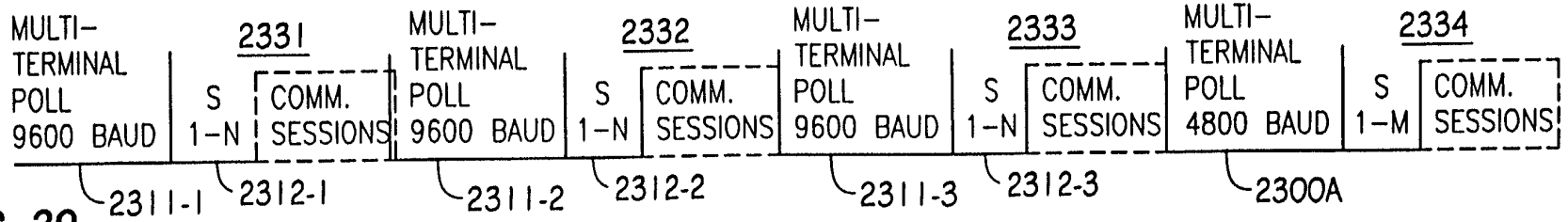


FIG. 39

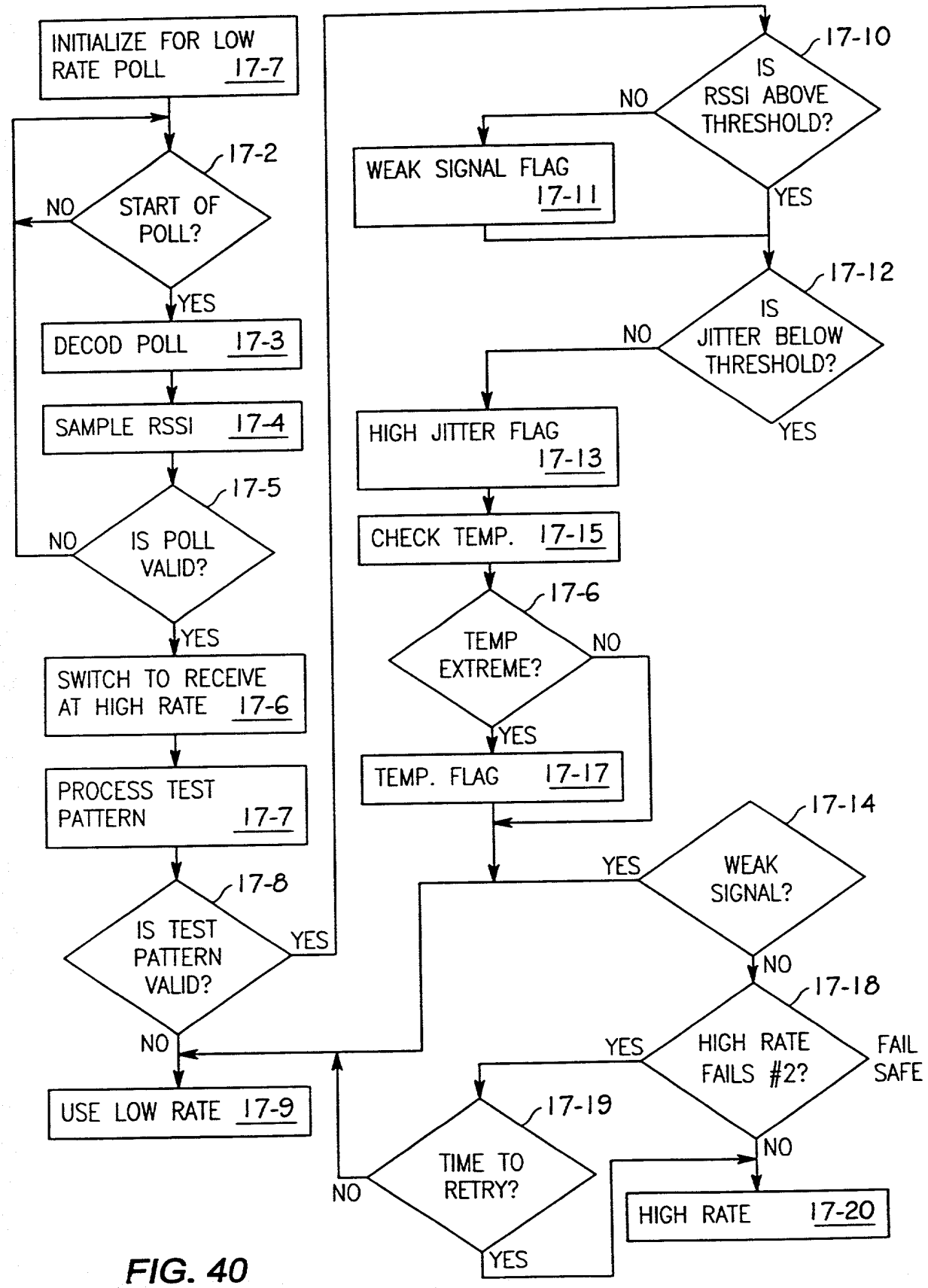

INITIALIZE FOR LOW RATE POLL 17-7
17-2
START OF POLL?
NO
YES
DECOD POLL 17-3
SAMPLE RSSI 17-4
17-5
IS POLL VALID?
NO
YES
SWITCH TO RECEIVE AT HIGH RATE 17-6
PROCESS TEST PATTERN 17-7
17-8
IS TEST PATTERN VALID?
YES
NO
USE LOW RATE 17-9
17-10
IS RSSI ABOVE THRESHOLD?
NO
YES
WEAK SIGNAL FLAG 17-11
17-12
IS JITTER BELOW THRESHOLD?
NO
YES
HIGH JITTER FLAG 17-13
CHECK TEMP. 17-15
17-6
TEMP EXTREME?
NO
YES
TEMP. FLAG 17-17
17-14
WEAK SIGNAL?
YES
NO
17-18
HIGH RATE FAILS #2?
YES
FAIL SAFE
NO
17-19
TIME TO RETRY?
NO
YES
HIGH RATE 17-20

FIG. 40

FIG. 41A

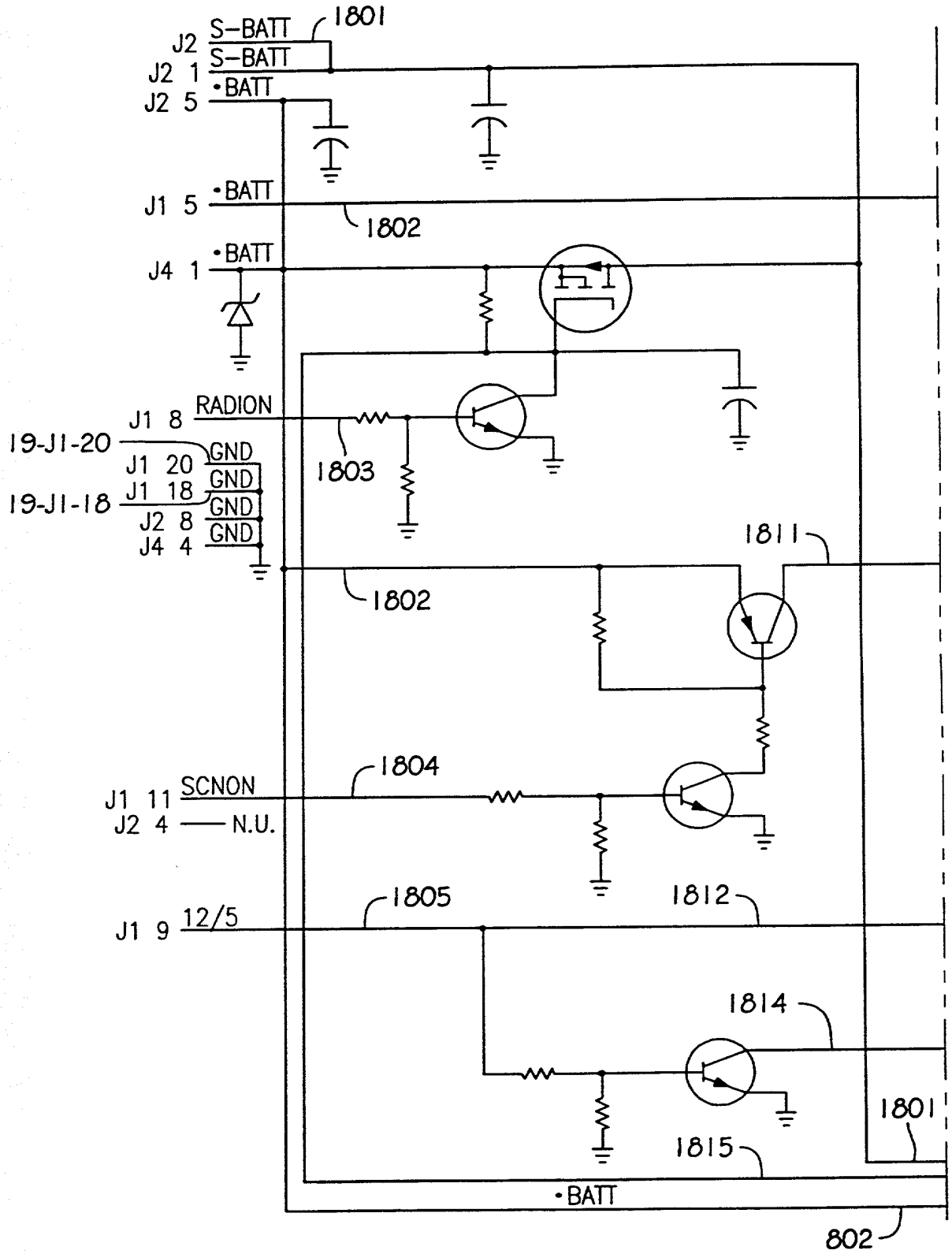

1801
J2 S-BATT
S-BATT
J2 1 •BATT
J2 5 •BATT
J1 5 •BATT
1802
J4 1 •BATT
J1 8 RADION
19-J1-20 GND
J1 20 GND
19-J1-18 J1 18 GND
J2 8 GND
J4 4 GND
1803
1811
1802
1804
J1 11 SCNON
J2 4 N.U.
1805
1812
J1 9 12/5
1814
1801
1815
•BATT
802

FIG. 41B

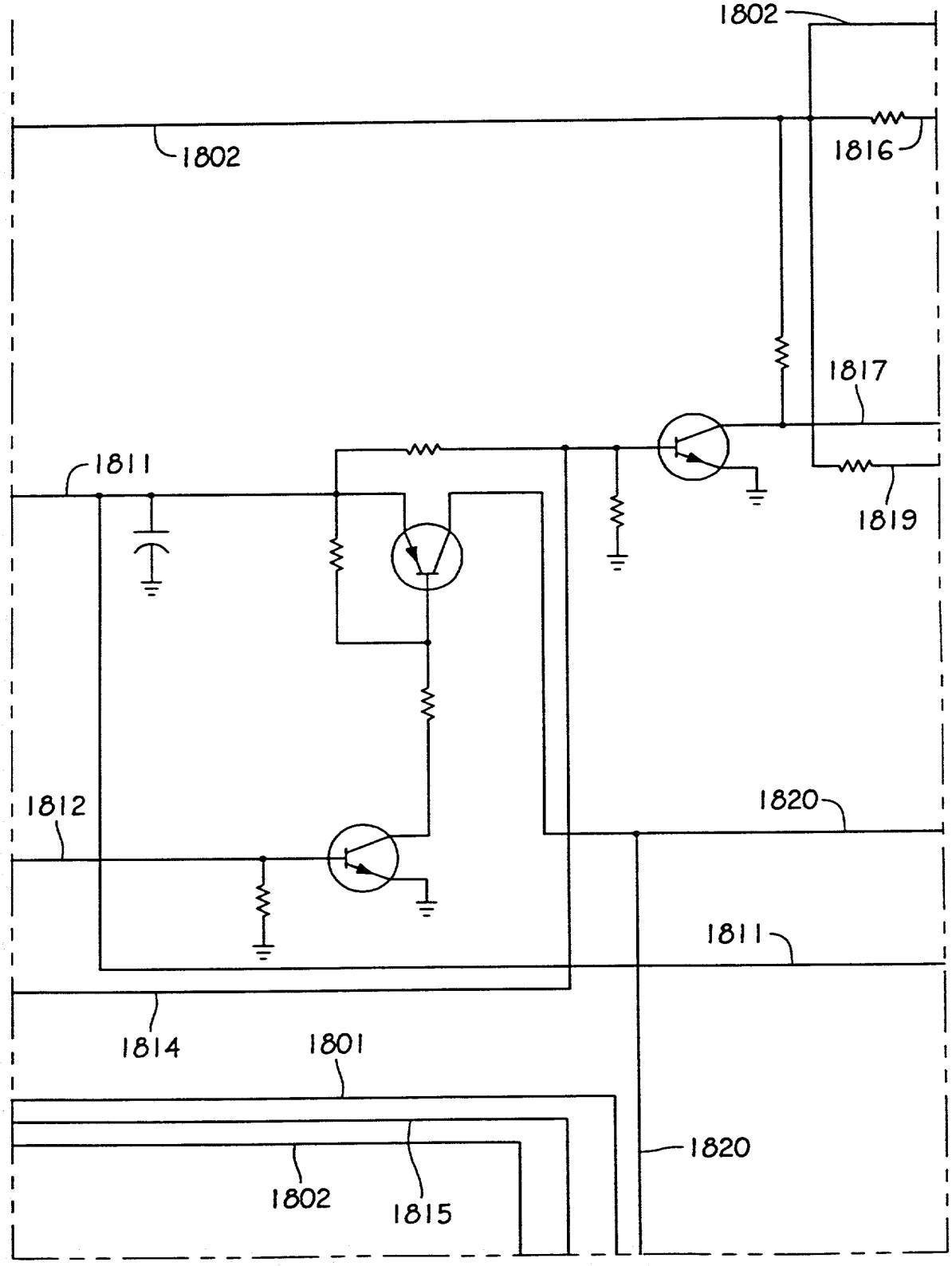

1802
1802
1816
1817
1811
1819
1812
1820
1811
1814
1801
1820
1802
1815

FIG. 41C

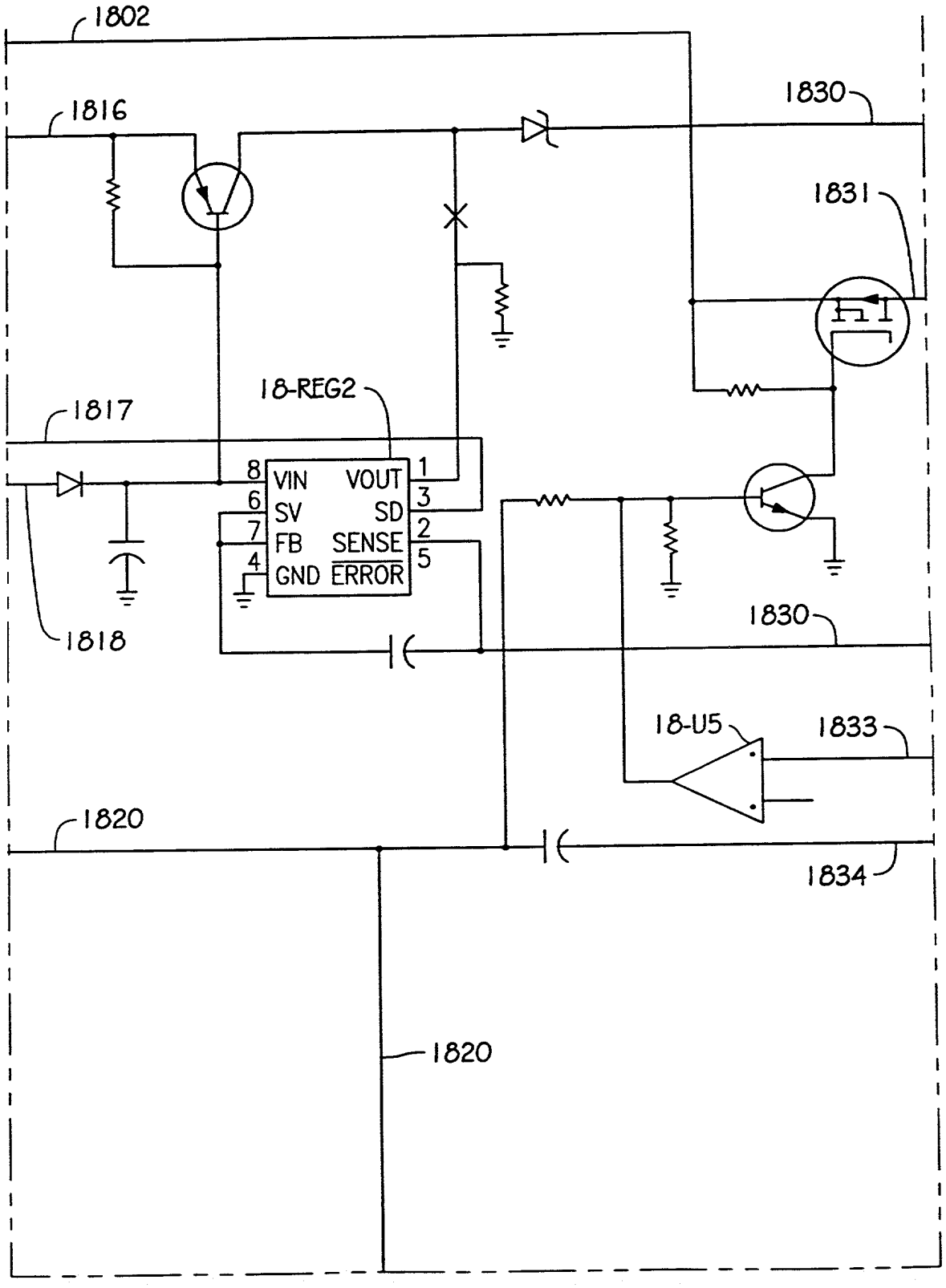

1802
1816
1830
1831
18-REG2
1817
8 VIN
6 SV
7 FB
4 GND
VOUT 1
SD 3
SENSE 2
ERROR 5
1818
1830
18-U5
1833
1820
1834
1820

FIG. 41D

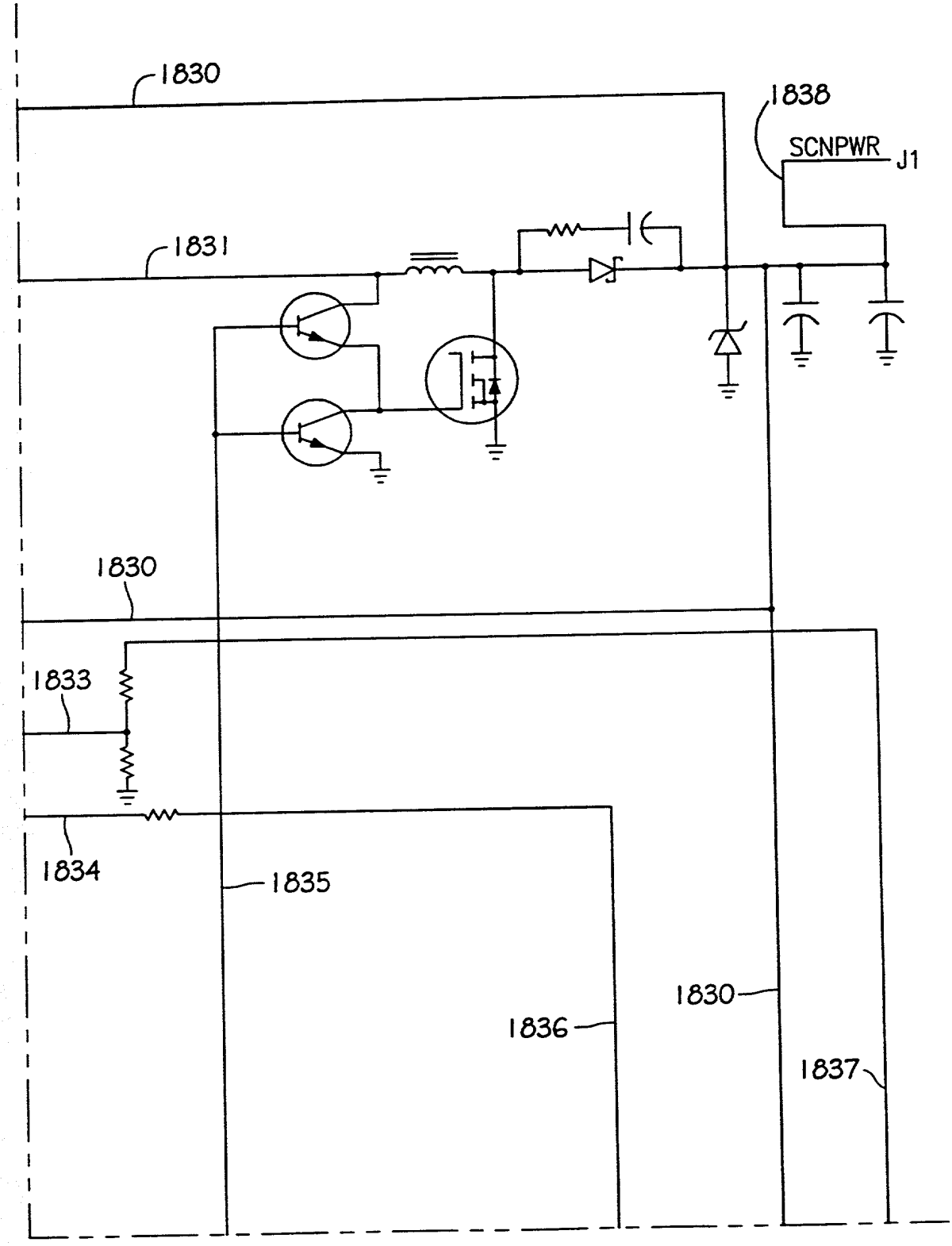


FIG. 41E

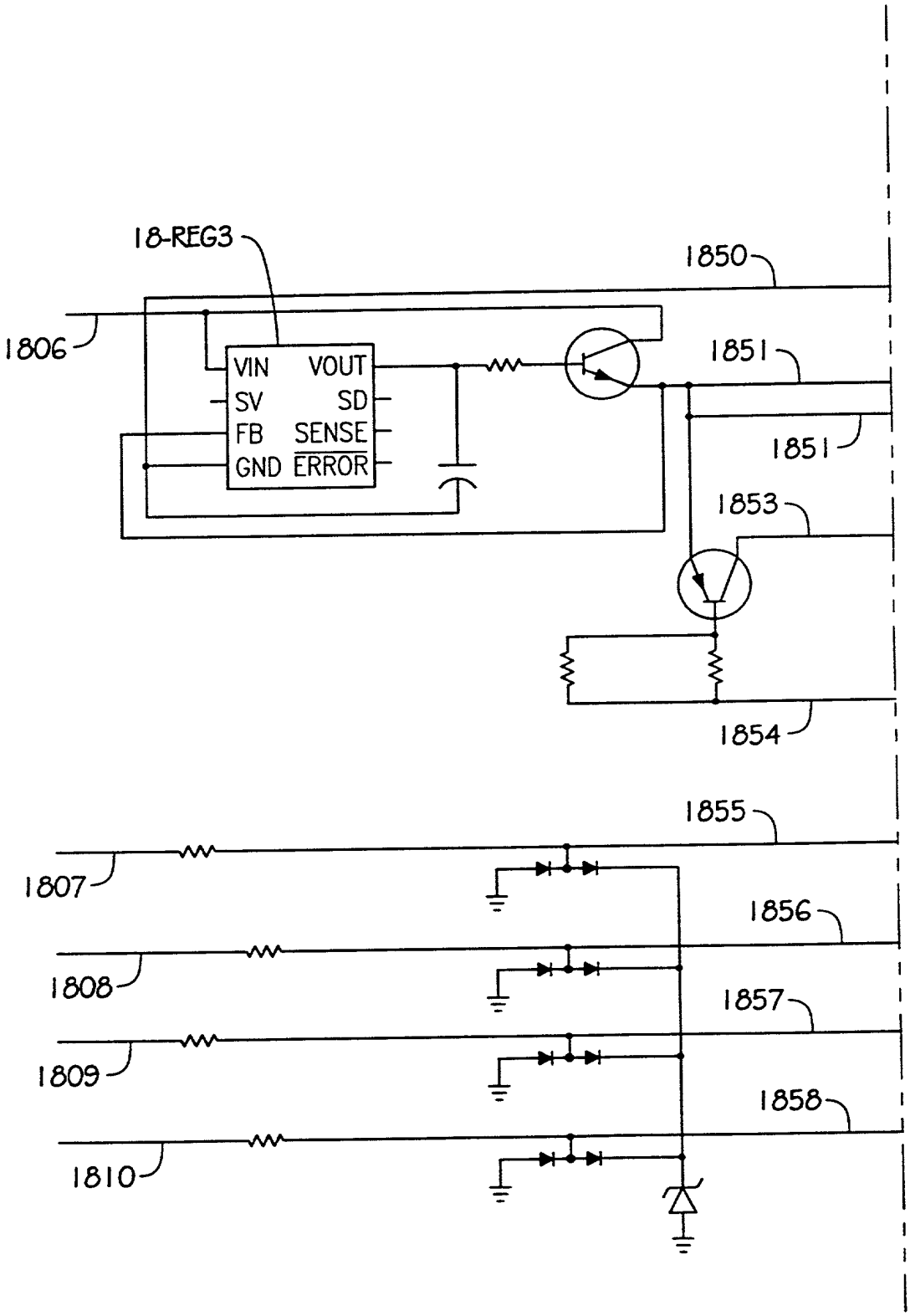

18-REG3
1850
1806
VIN
VOUT
SV
SD
FB
SENSE
GND
ERROR
1851
1851
1853
1854
1855
1807
1856
1808
1857
1809
1858
1810

FIG. 41F

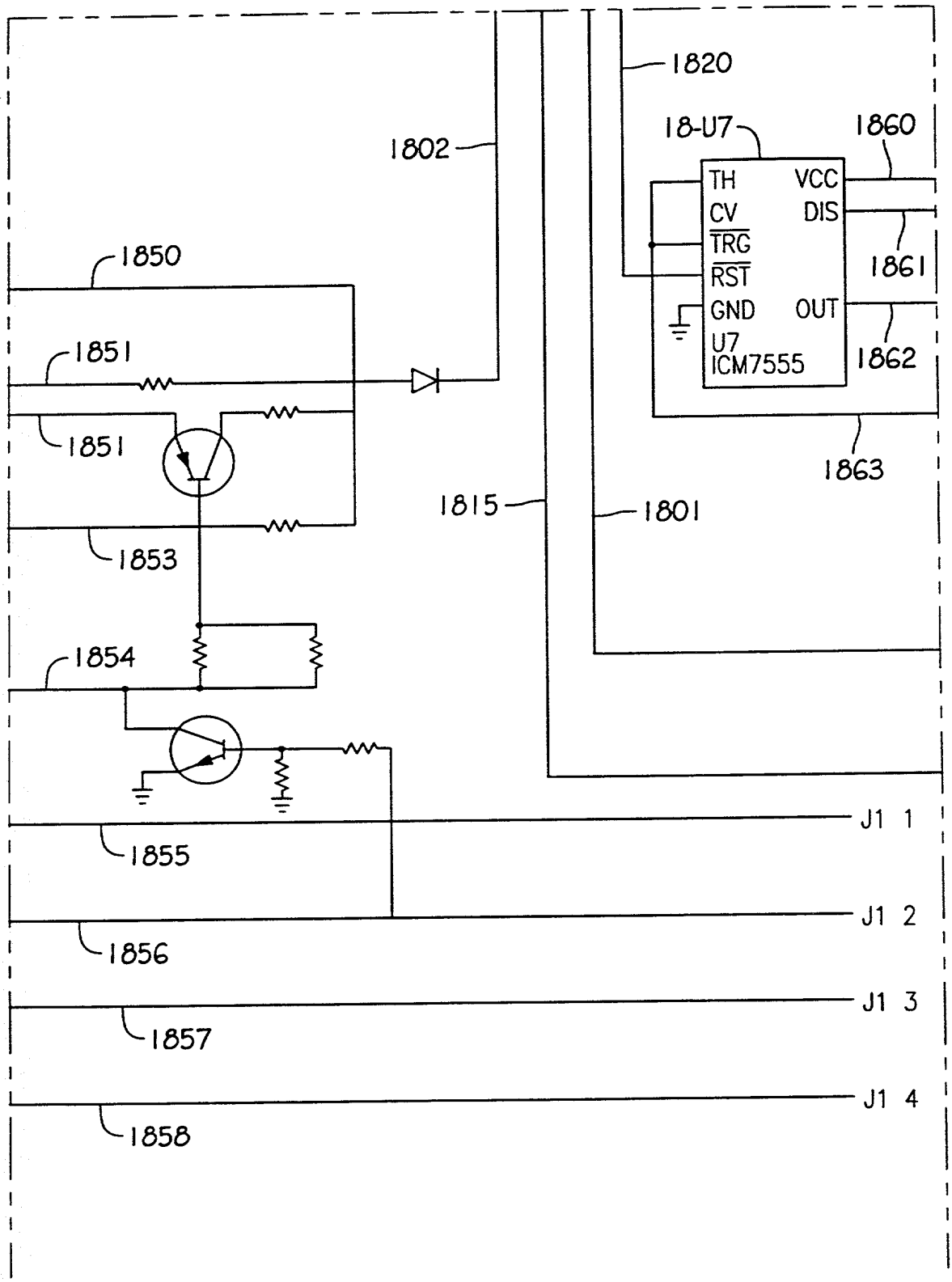

1820
18-U7
1860
1802
TH
VCC
CV
DIS
TRG
RST
1861
1850
GND
OUT
1851
U7
ICM7555
1862
1851
1863
1815
1801
1853
1854
J1 1
1855
J1 2
1856
J1 3
1857
J1 4
1858

FIG. 41G

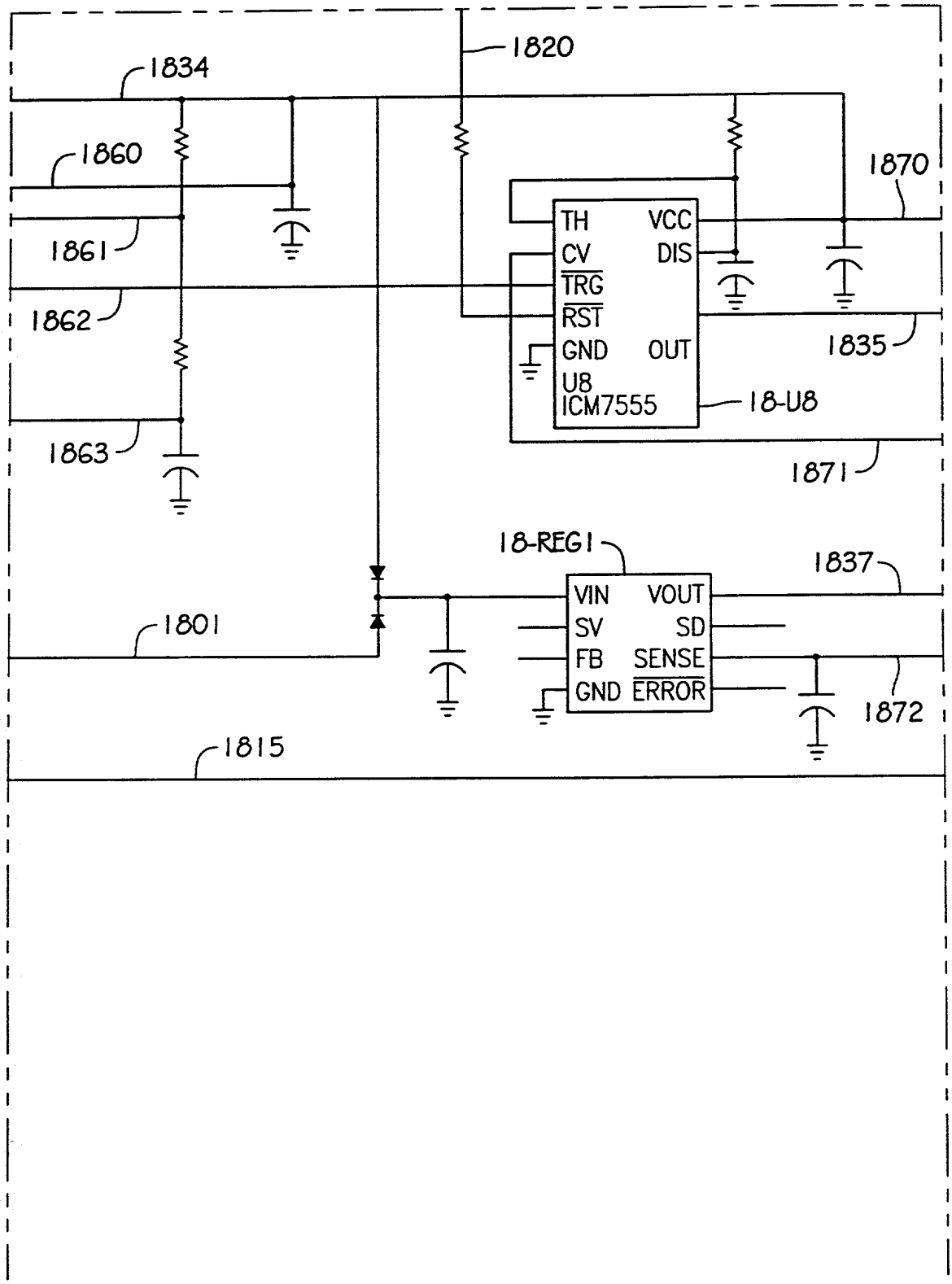

1820
1834
1860
1861
1862
1863
1870
TH
VCC
CV
DIS
TRG
RST
GND
OUT
U8
ICM7555
18-U8
1835
1871
18-REG1
1837
VIN
VOUT
SV
SD
FB
SENSE
GND
ERROR
1801
1872
1815

FIG. 41H

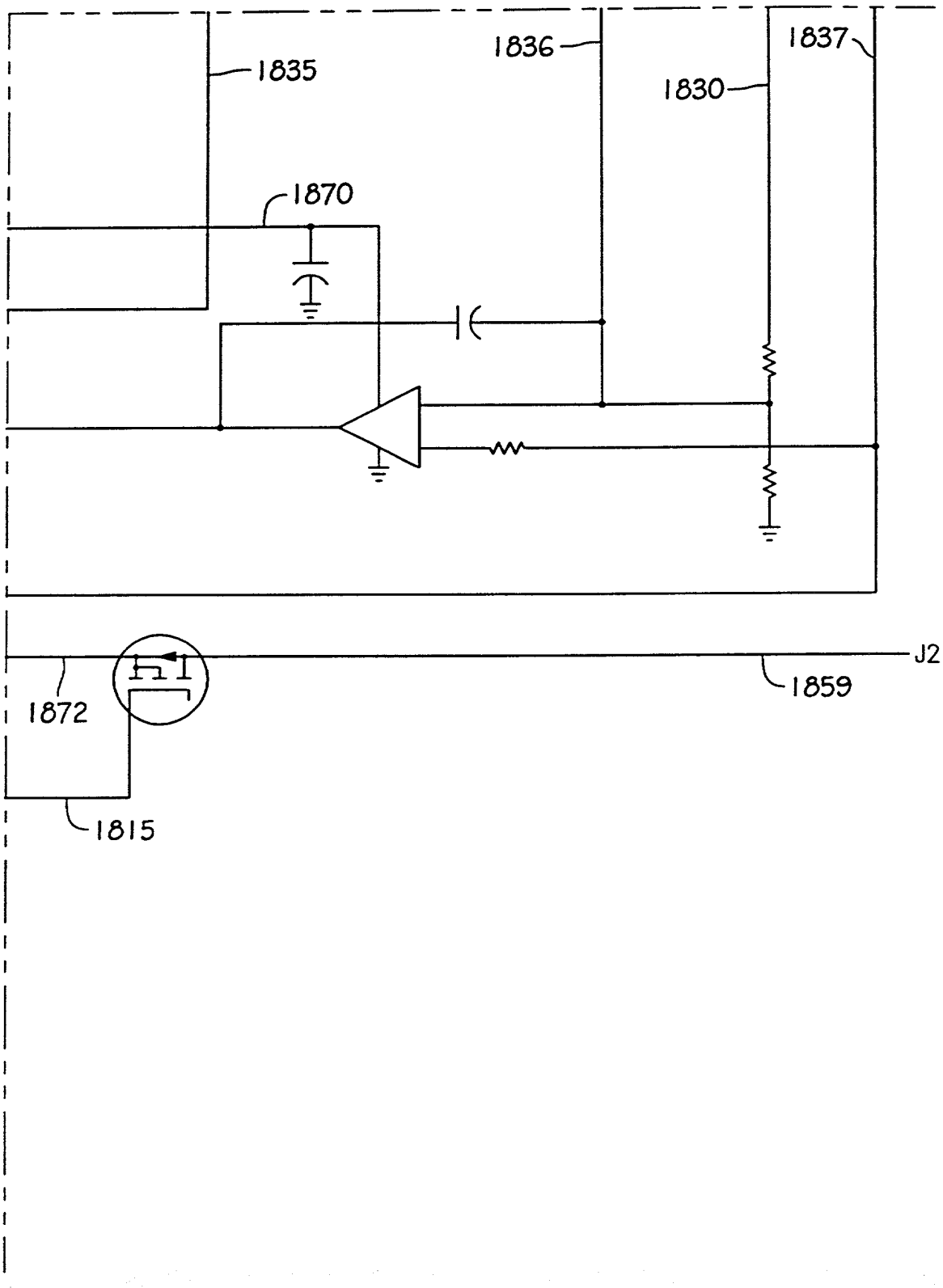


FIG. 42A

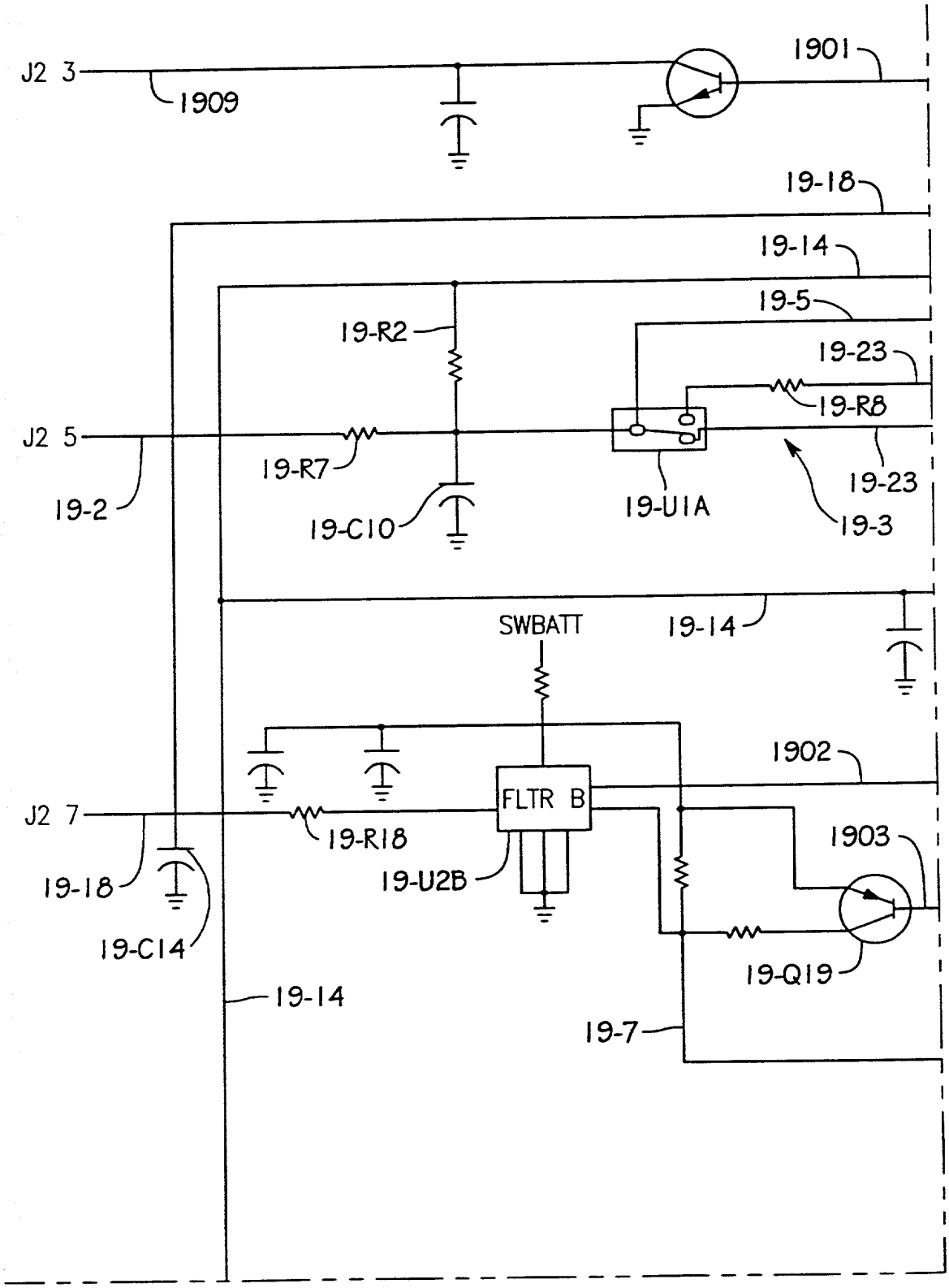

J2 3
1909
1901
19-18
19-14
19-5
19-R2
19-23
19-R8
J2 5
19-R7
19-2
19-C10
19-U1A
19-23
19-3
SWBATT
19-14
1902
FLTR B
J2 7
19-R18
19-18
19-U2B
1903
19-C14
19-Q19
19-14
19-7

FIG. 42B

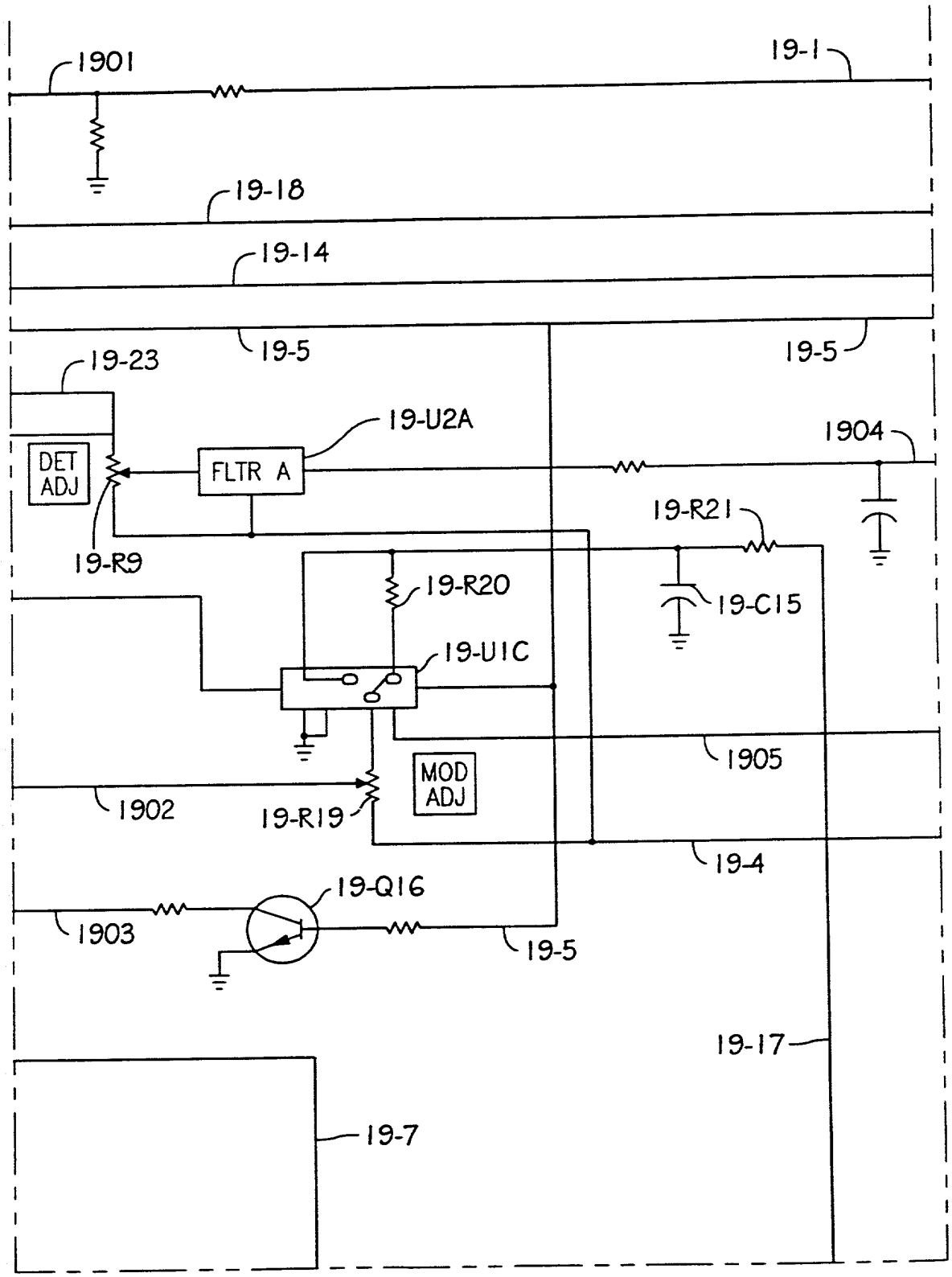

1901
19-1
19-18
19-14
19-5
19-5
19-23
19-U2A
DET ADJ
FLTR A
1904
19-R21
19-R9
19-R20
19-C15
19-U1C
1905
MOD ADJ
1902
19-R19
19-4
19-Q16
1903
19-5
19-17
19-7

FIG. 42C

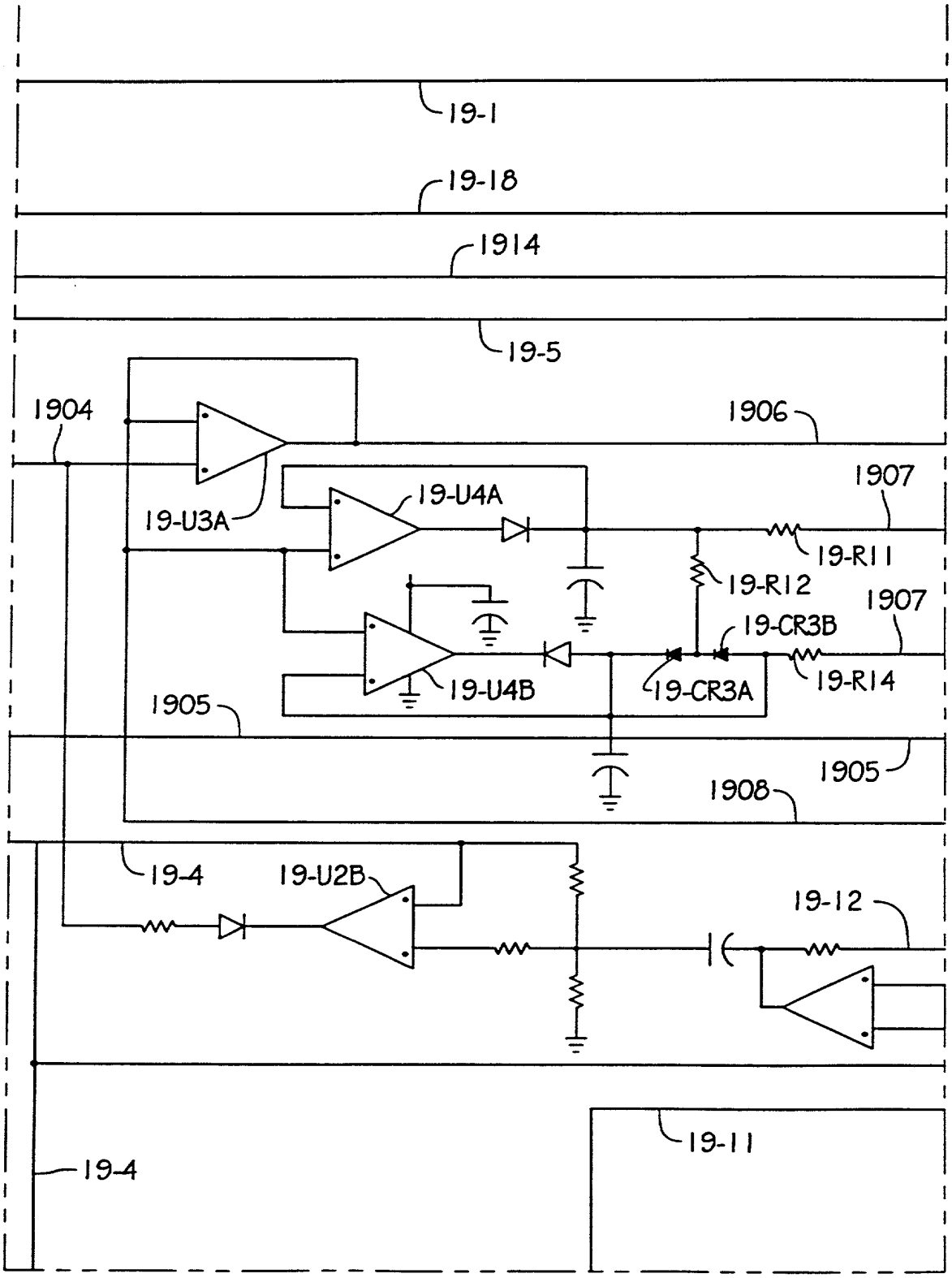
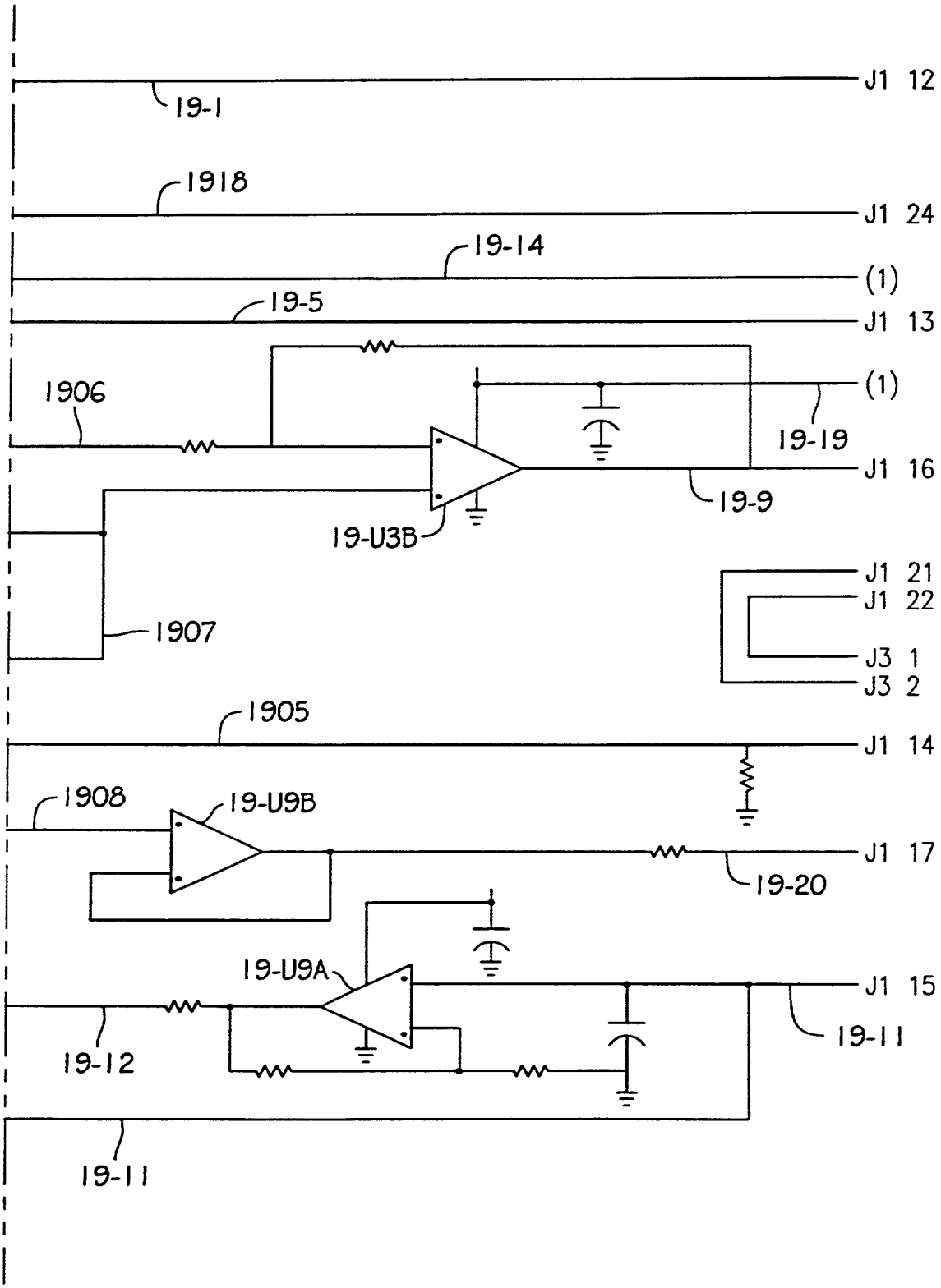

19-1
19-18
1914
19-5
1904
1906
19-U3A
19-U4A
1907
19-R11
19-R12
19-CR3B
19-U4B
19-CR3A
19-R14
1905
1908
19-4
19-U2B
19-12
19-11

FIG. 42D


J1 12
19-1
1918
J1 24
19-14
(1)
19-5
J1 13
1906
(1)
19-19
J1 16
19-9
19-U3B
J1 21
J1 22
J3 1
J3 2
1907
1905
J1 14
1908
19-U9B
J1 17
19-20
19-U9A
J1 15
19-11
19-12
19-11

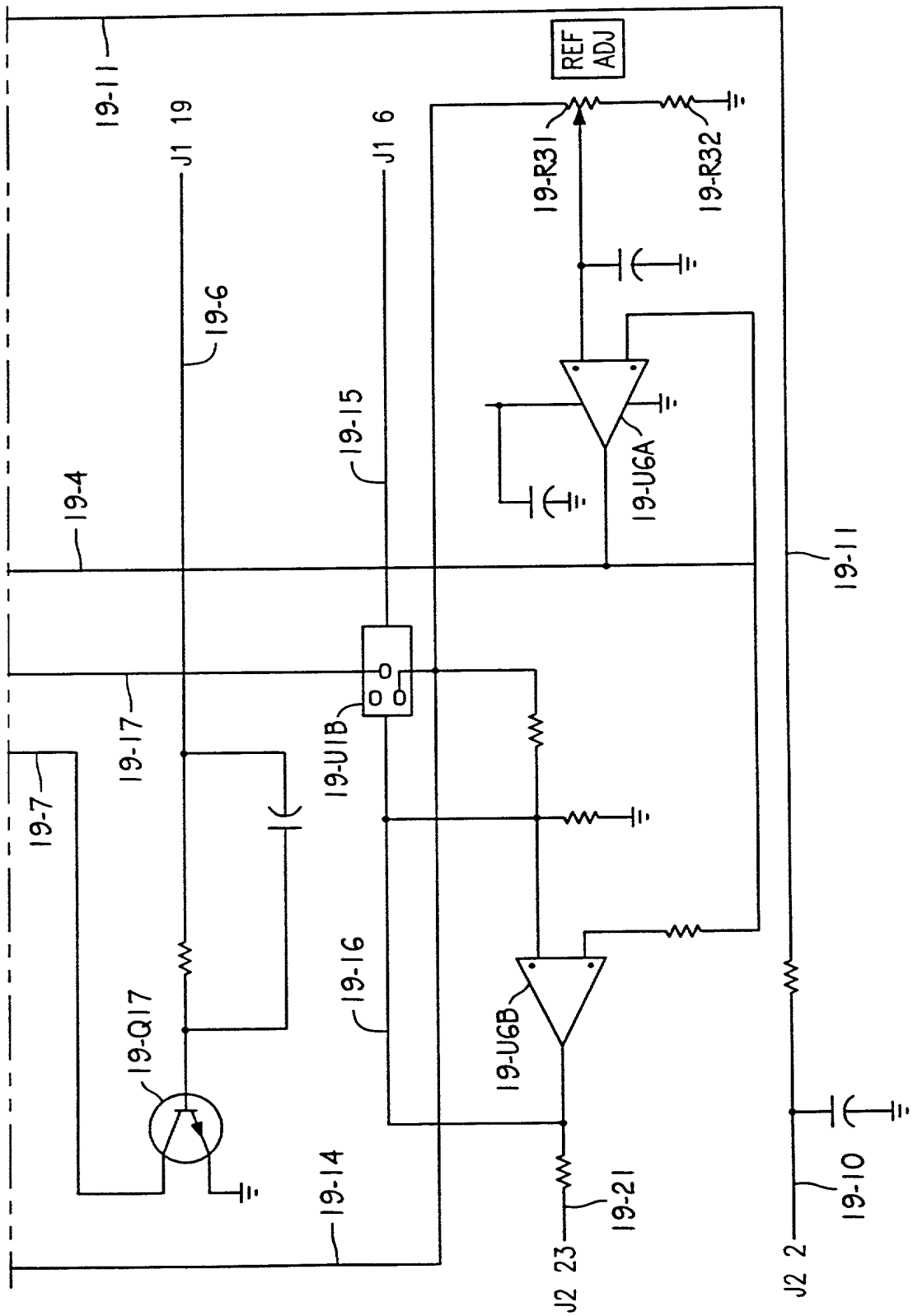

19-11
J1 19
J1 6
REF ADJ
19-R31
19-R32
19-6
19-15
19-4
19-U6A
19-11
19-17
19-U1B
19-7
19-Q17
19-16
19-U6B
19-14
19-21
J2 23
J2 2
19-10

FIG. 42E

FIG. 43A

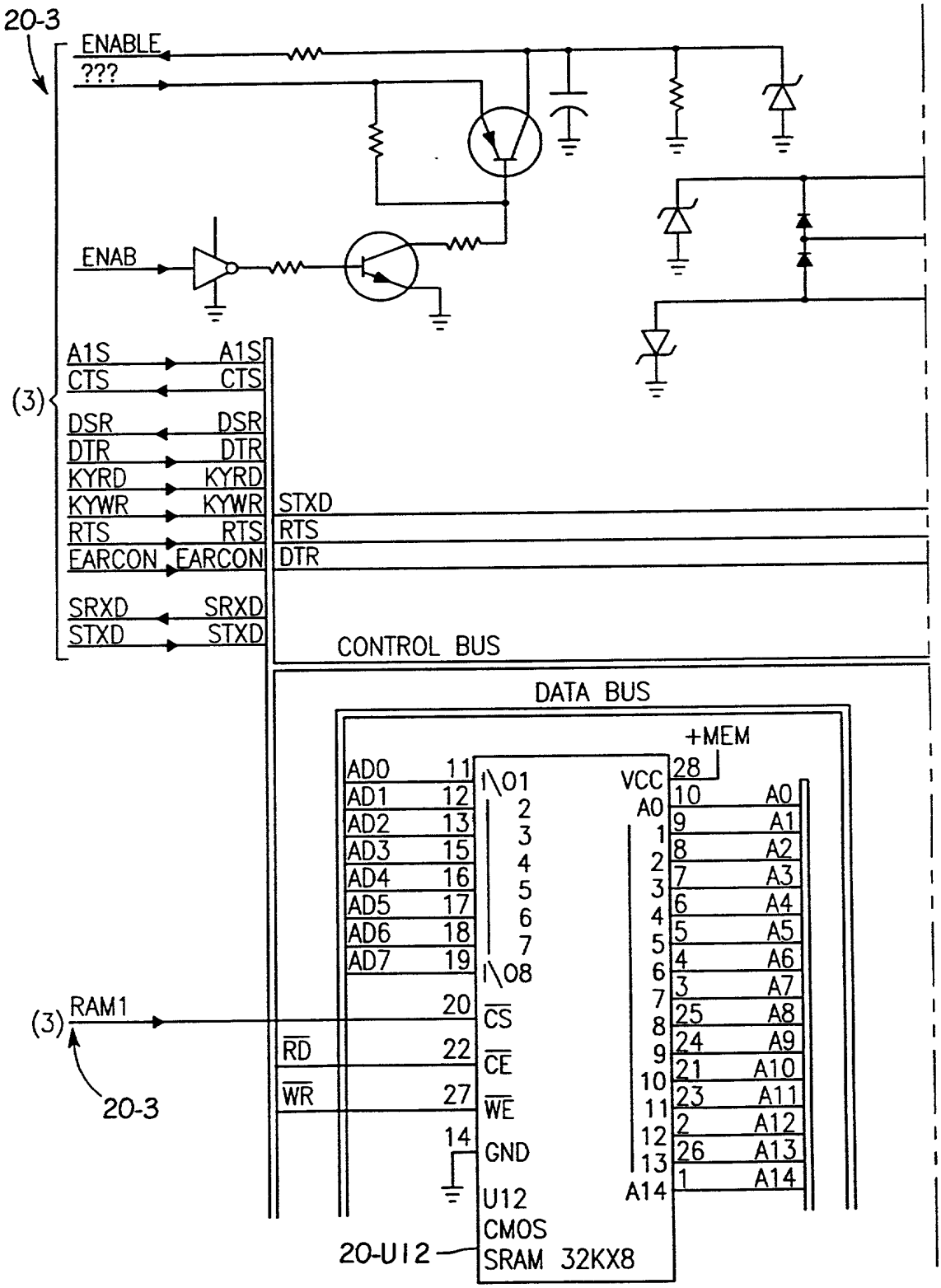

20-3
ENABLE
???
ENAB
A1S
CTS
DSR
DTR
KYRD
KYWR
RTS
EARCON
SRXD
STXD
(3)
STXD
RTS
DTR
CONTROL BUS
DATA BUS
+MEM
AD0 11
AD1 12
AD2 13
AD3 15
AD4 16
AD5 17
AD6 18
AD7 19
I\O1
I\O8
20 CS
RD 22 CE
WR 27 WE
14 GND
U12
CMOS
SRAM 32KX8
20-U12
VCC 28
A0 10
A1 9
A2 8
A3 7
A4 6
A5 5
A6 4
A7 3
A8 25
A9 24
A10 21
A11 23
A12 2
A13 26
A14 1
(3) RAM1
20-3

FIG. 43B

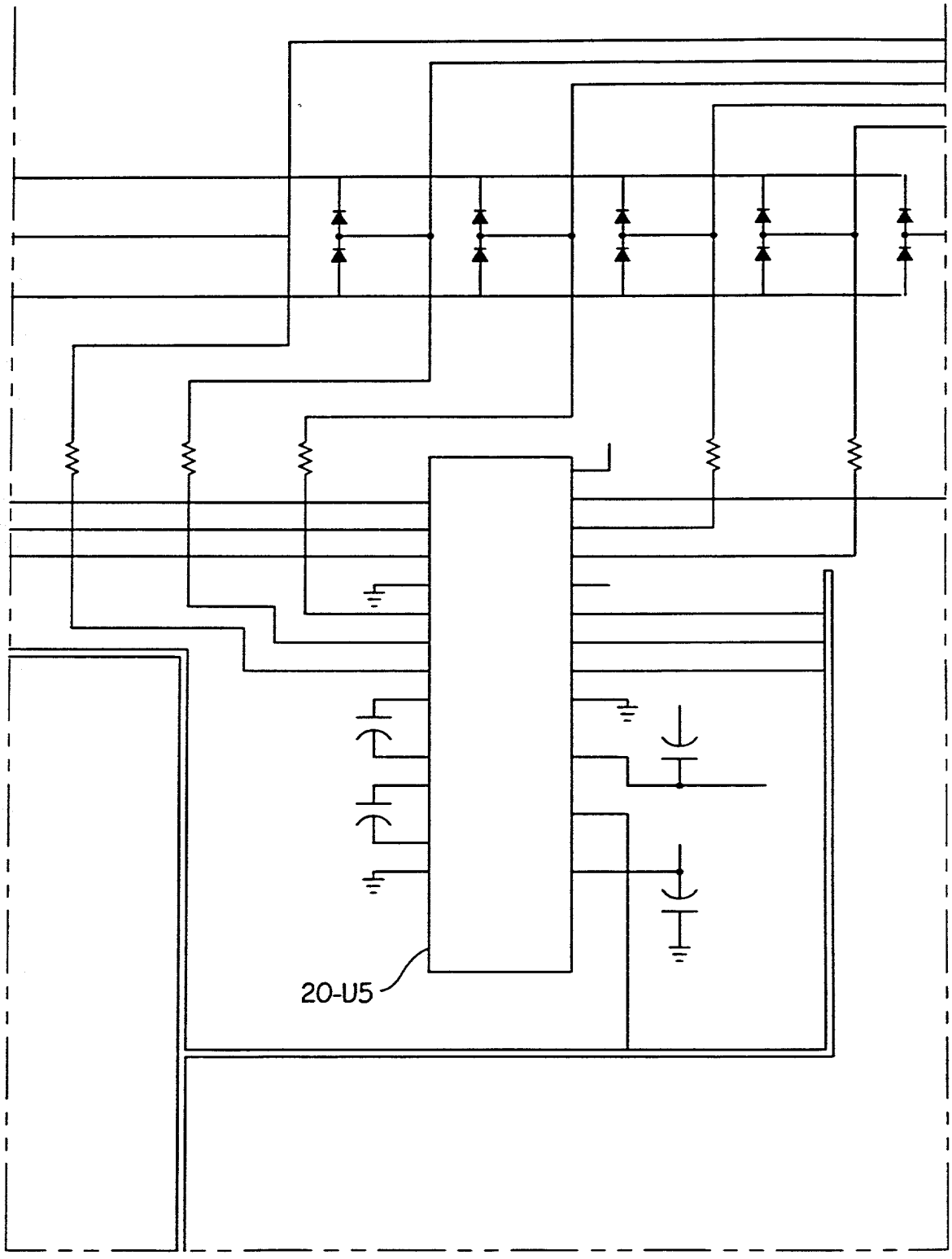
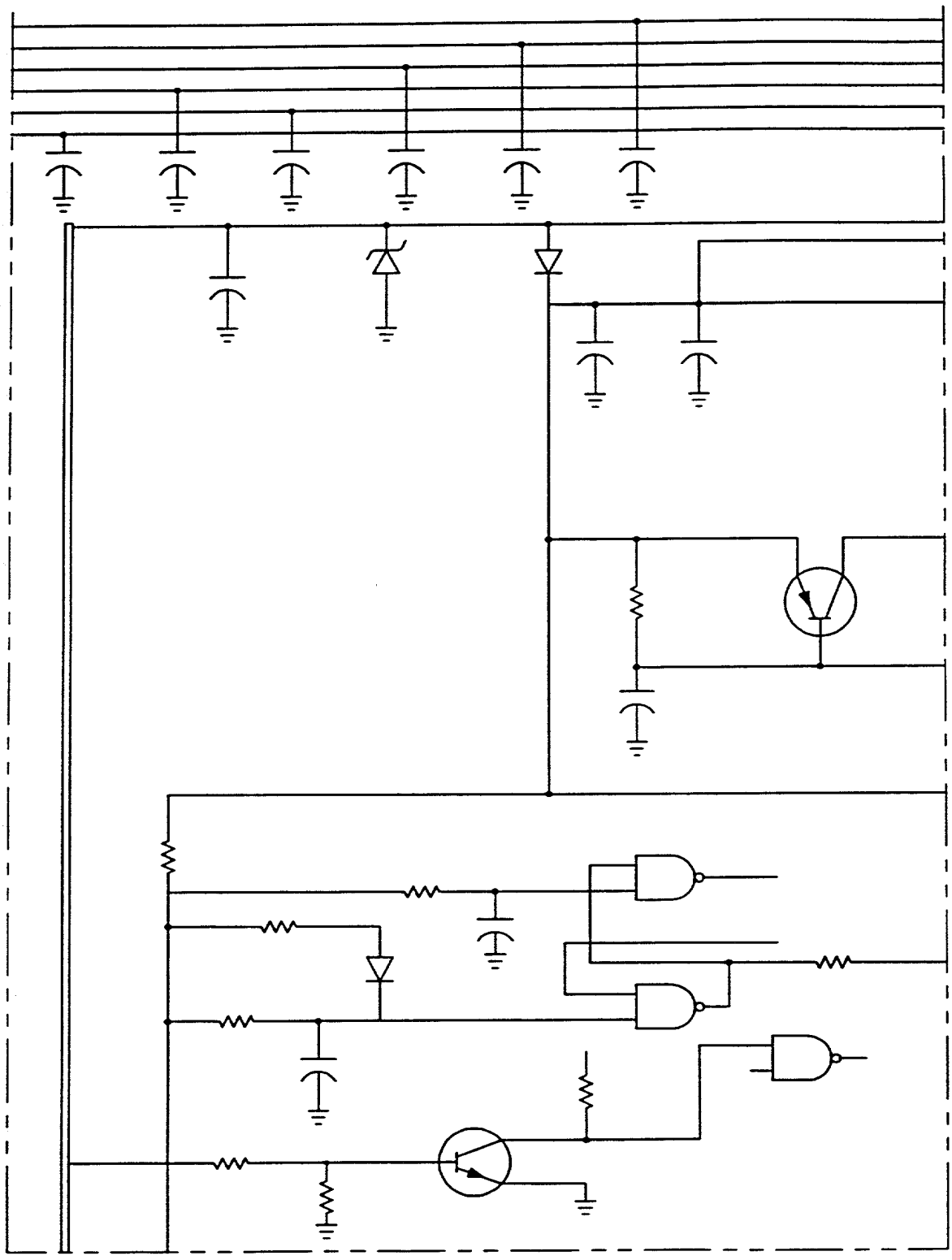


FIG. 43C



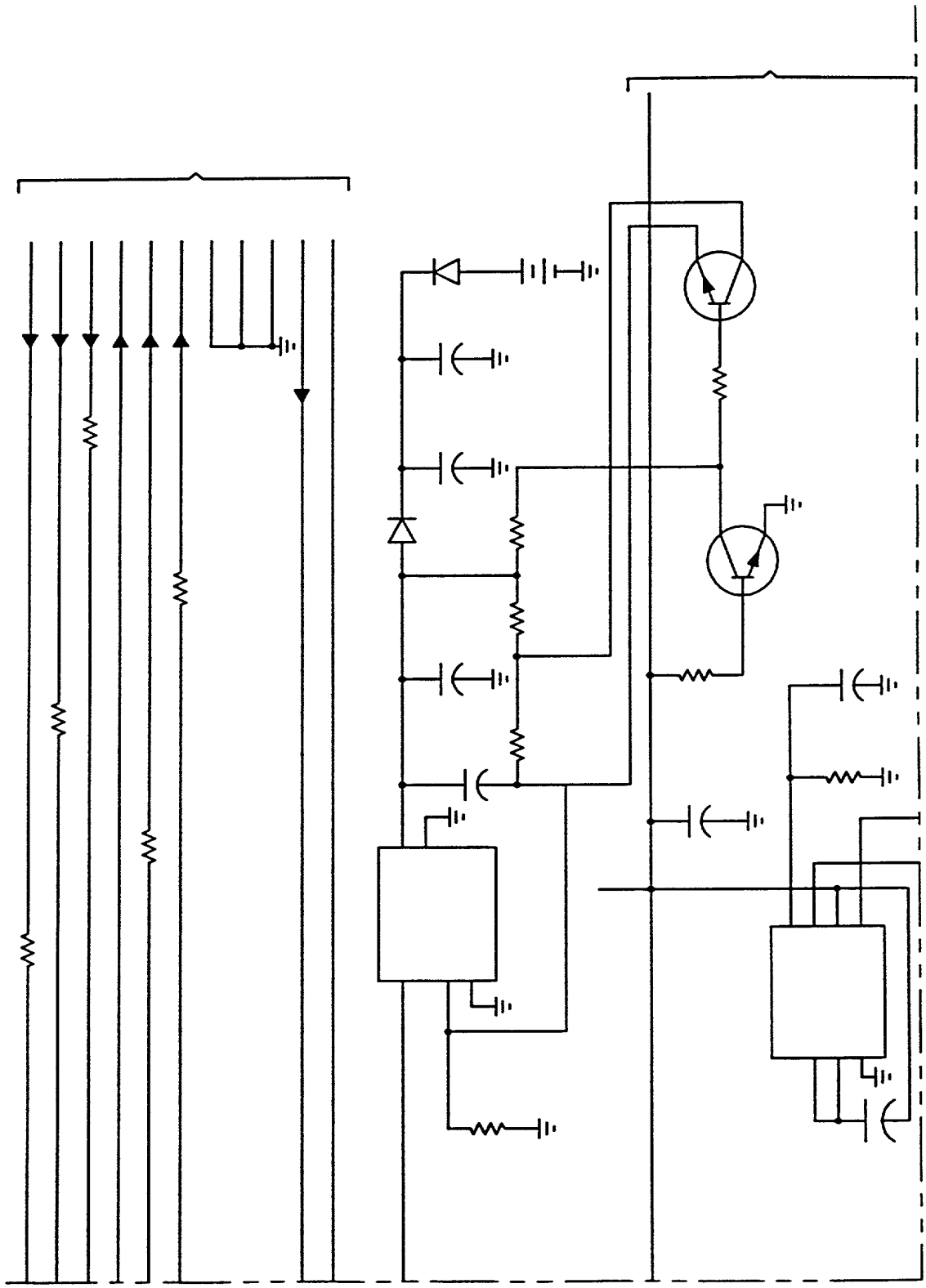


FIG. 43D

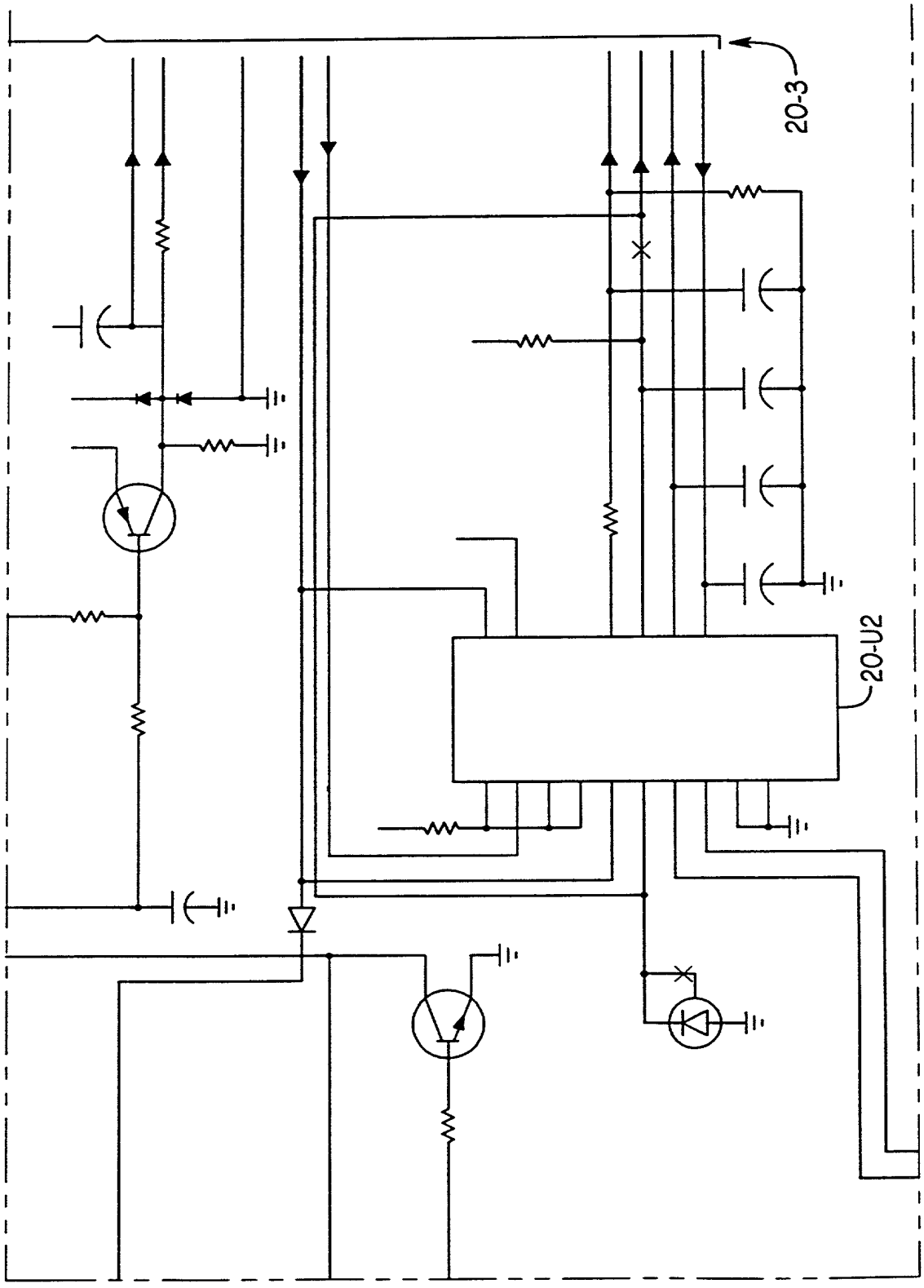


FIG. 43E

FIG. 43F

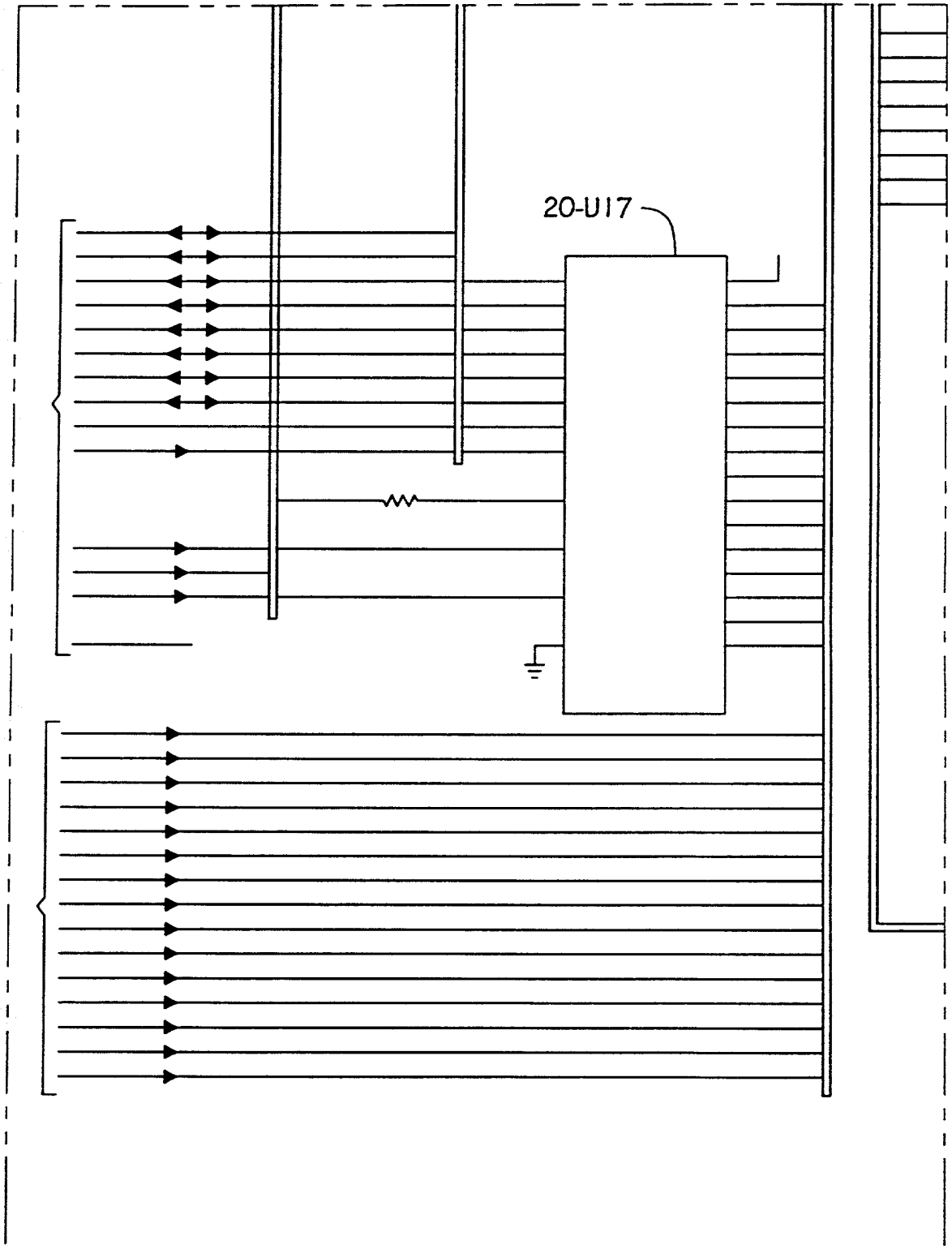
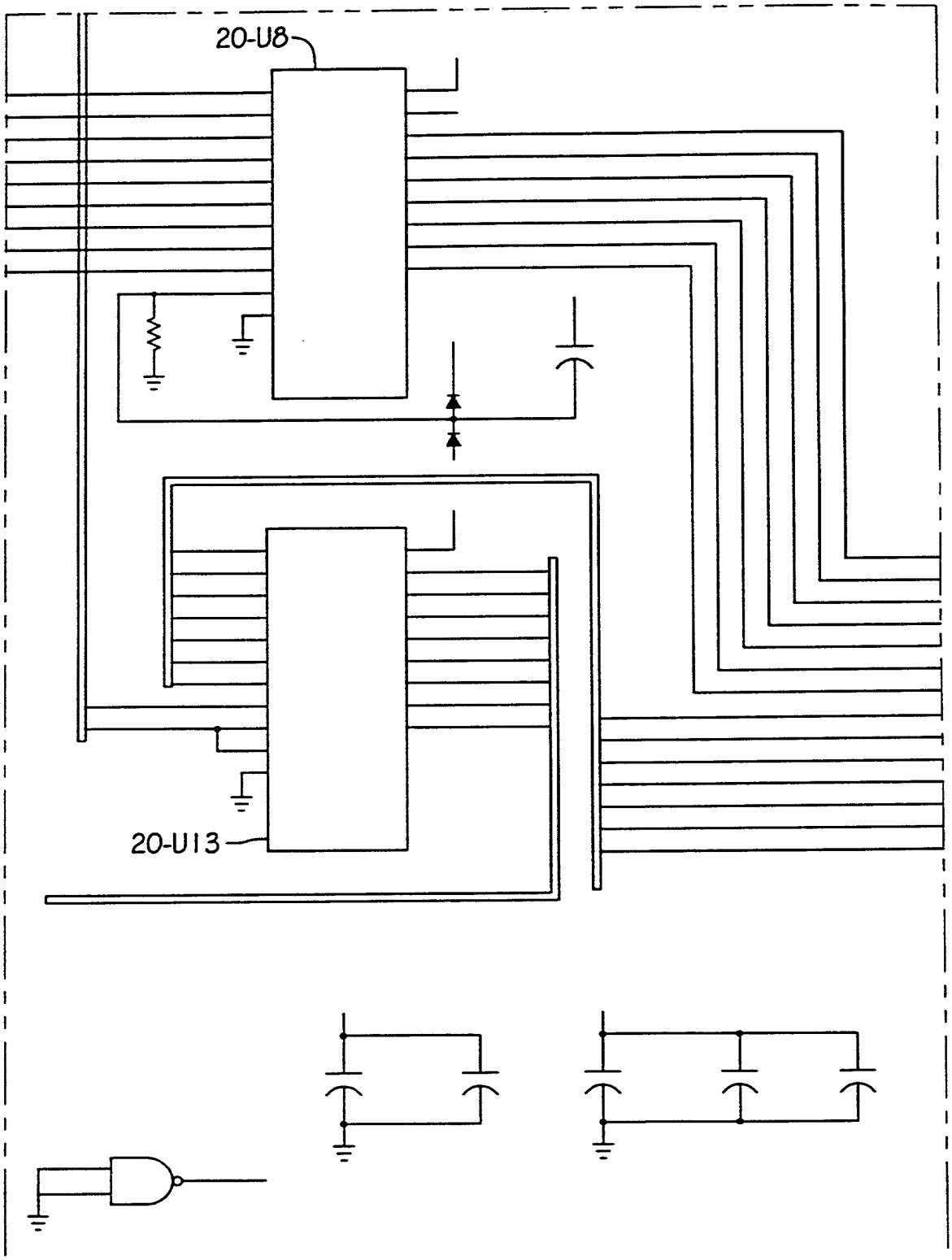


FIG. 43G



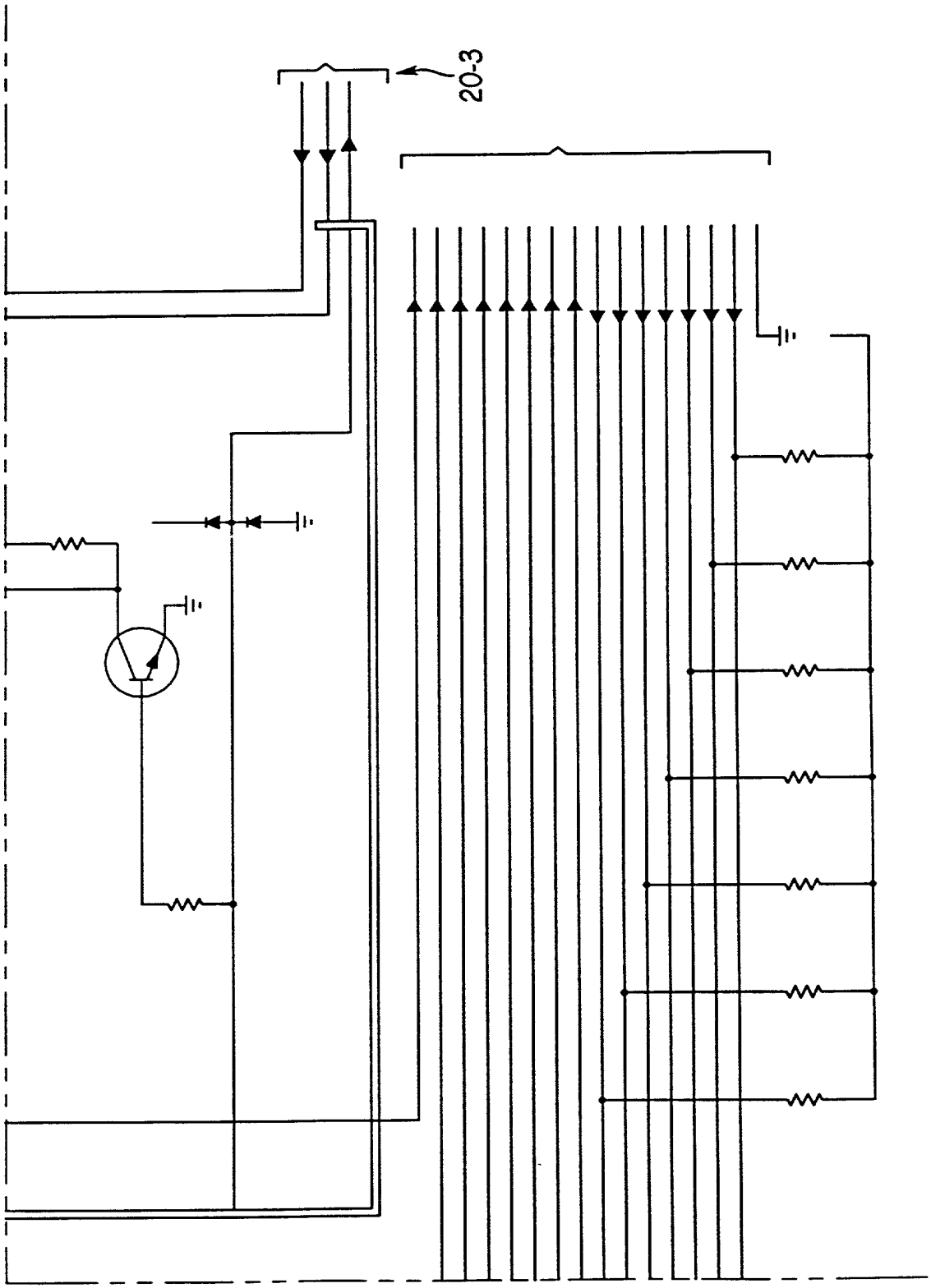


FIG. 43H

FIG. 44A

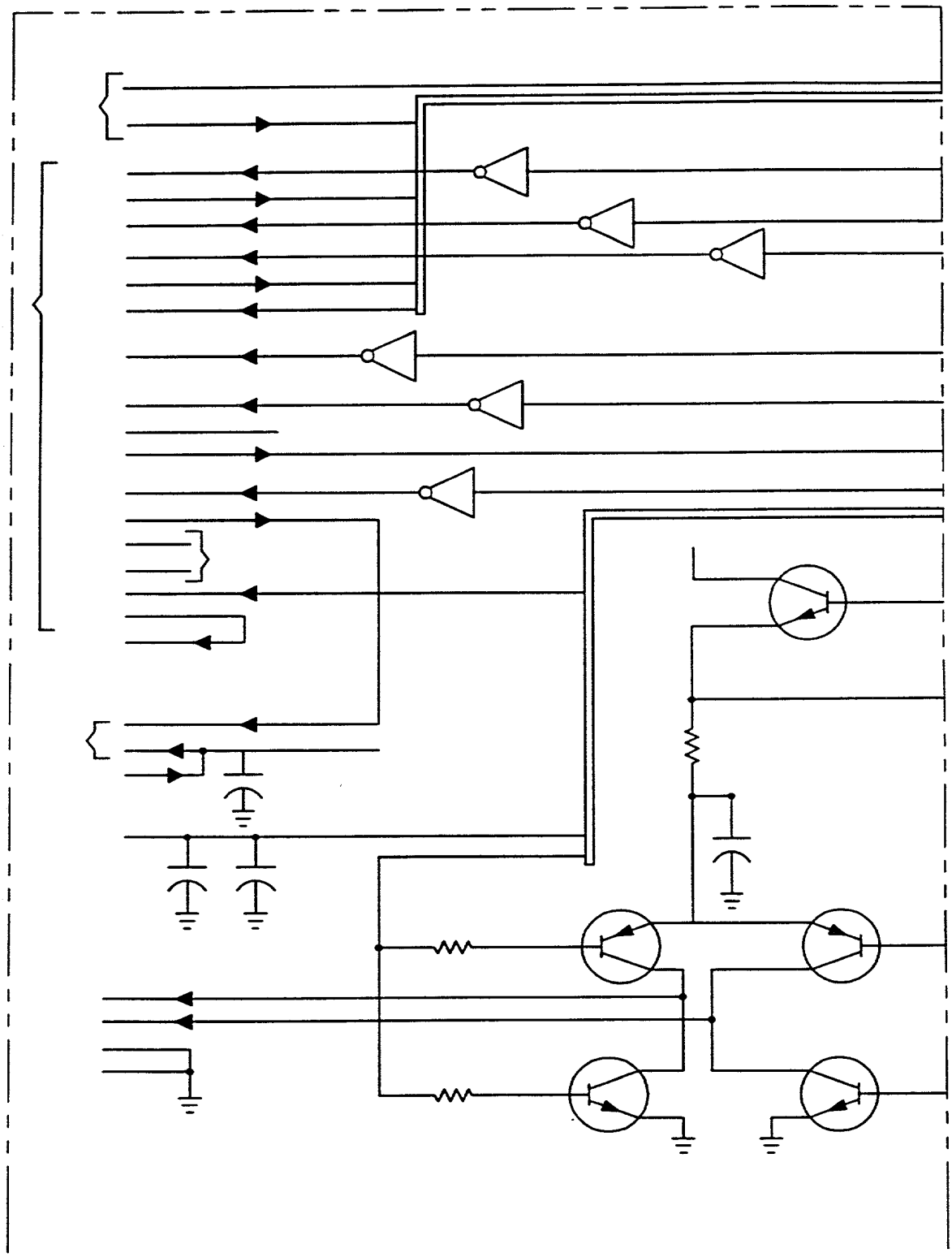


FIG. 44B

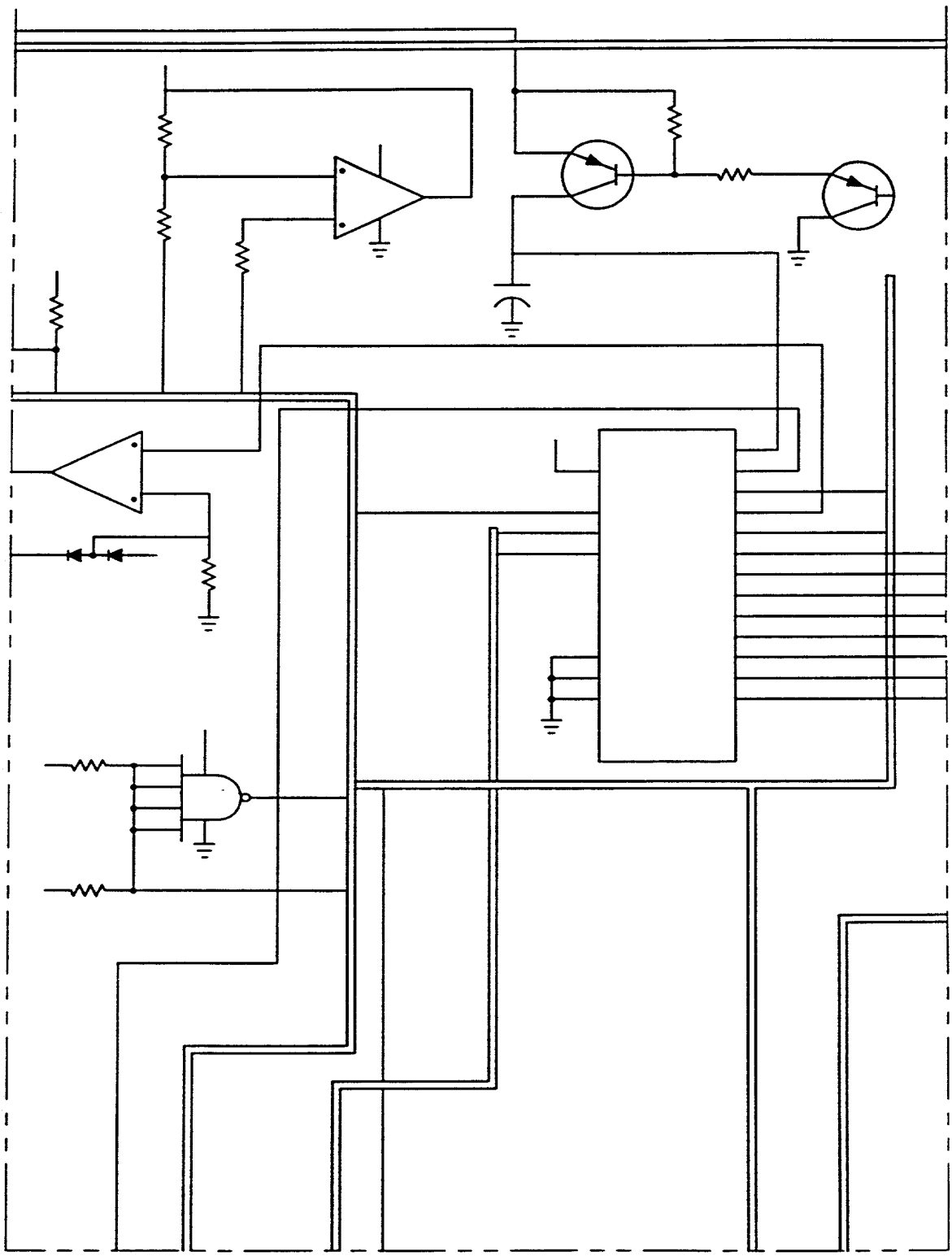


FIG. 44C

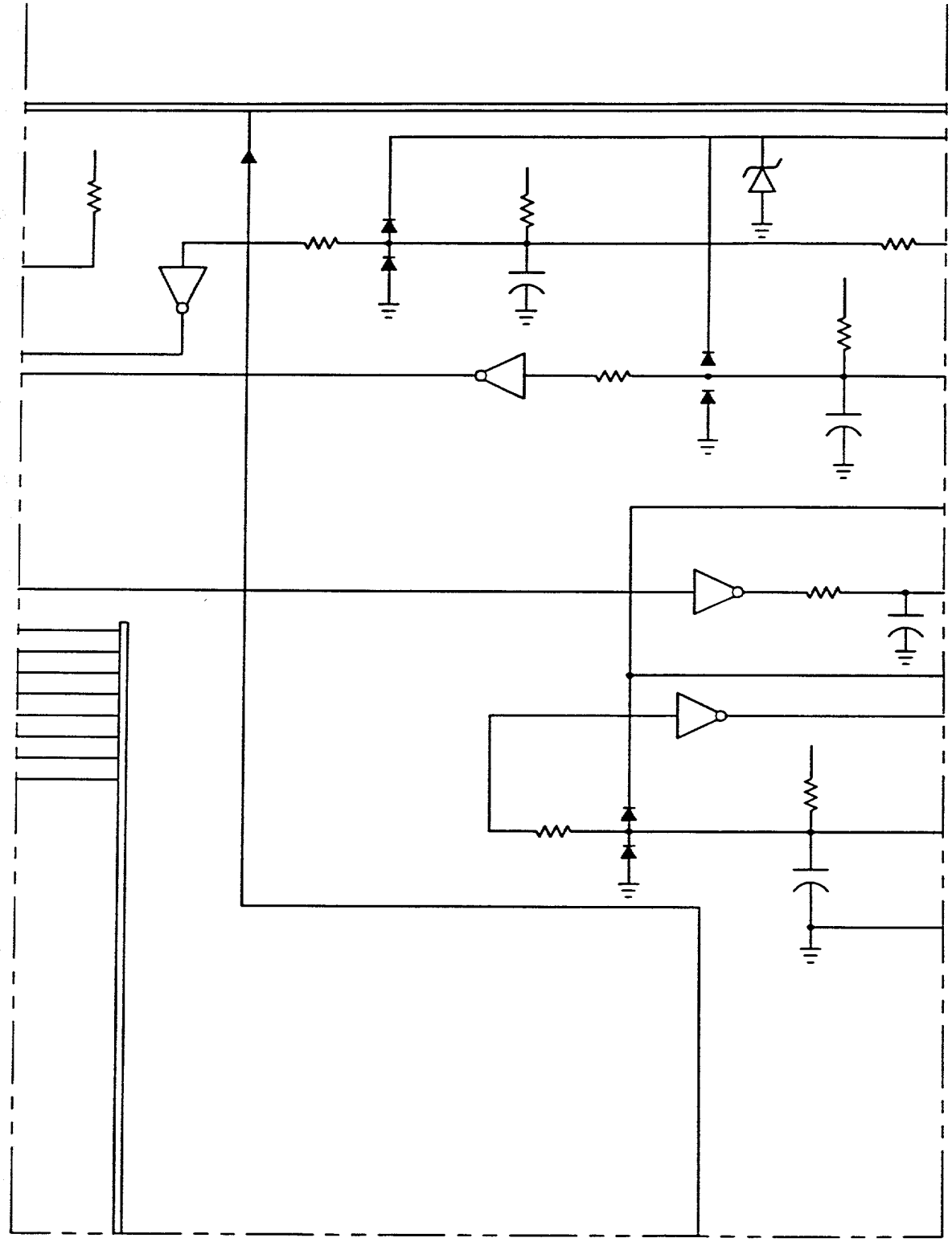


FIG. 44D

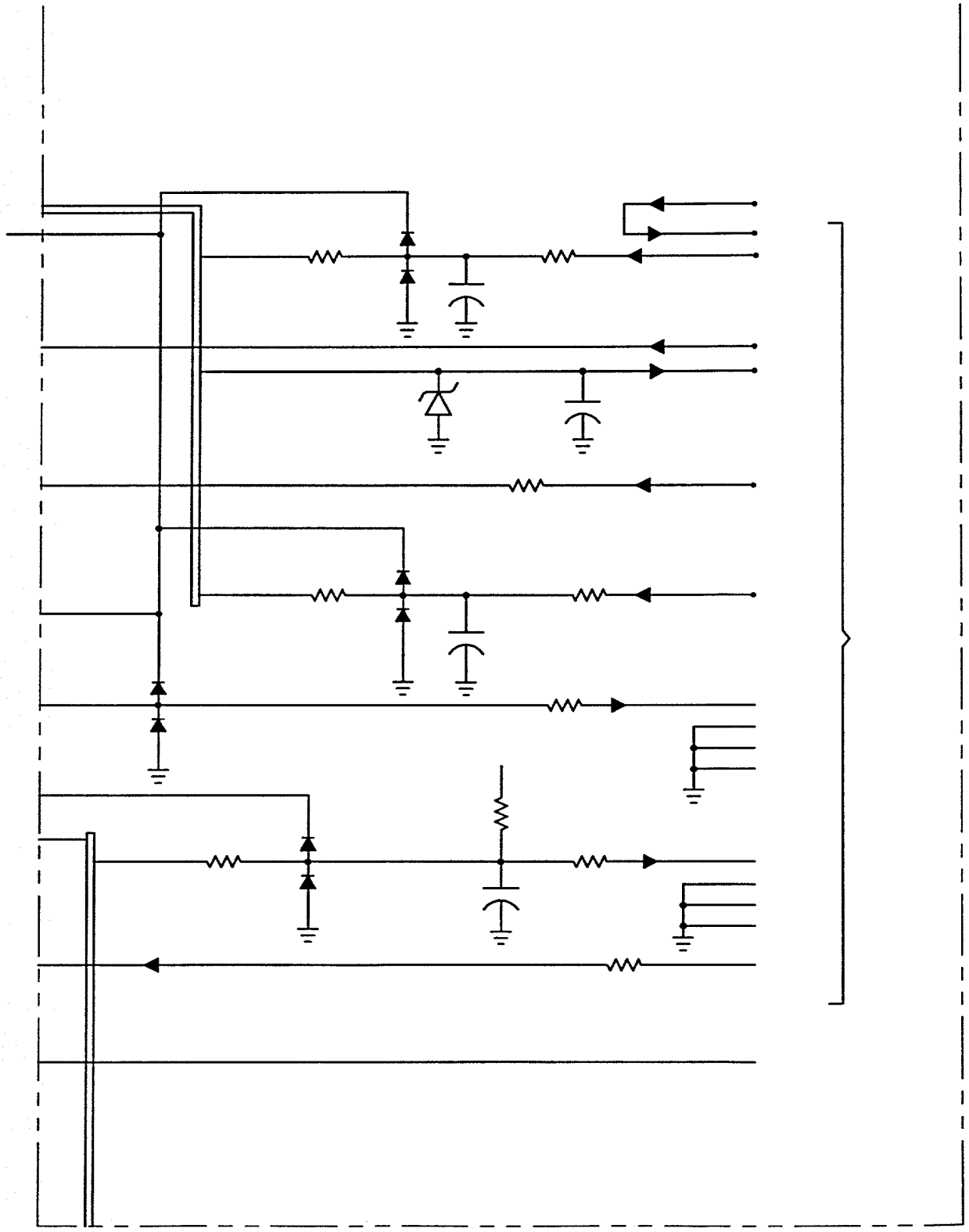


FIG. 44E

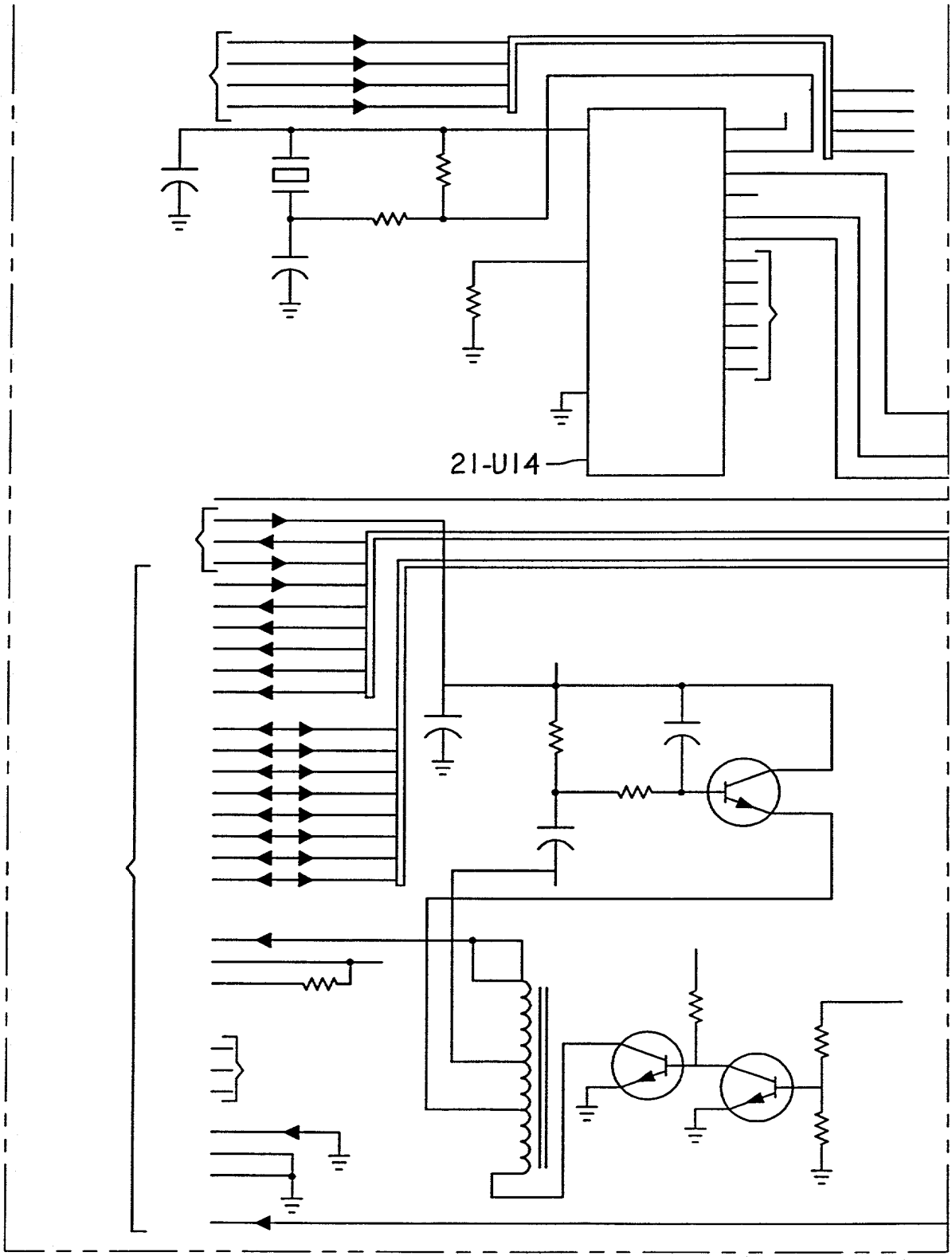


FIG. 44F

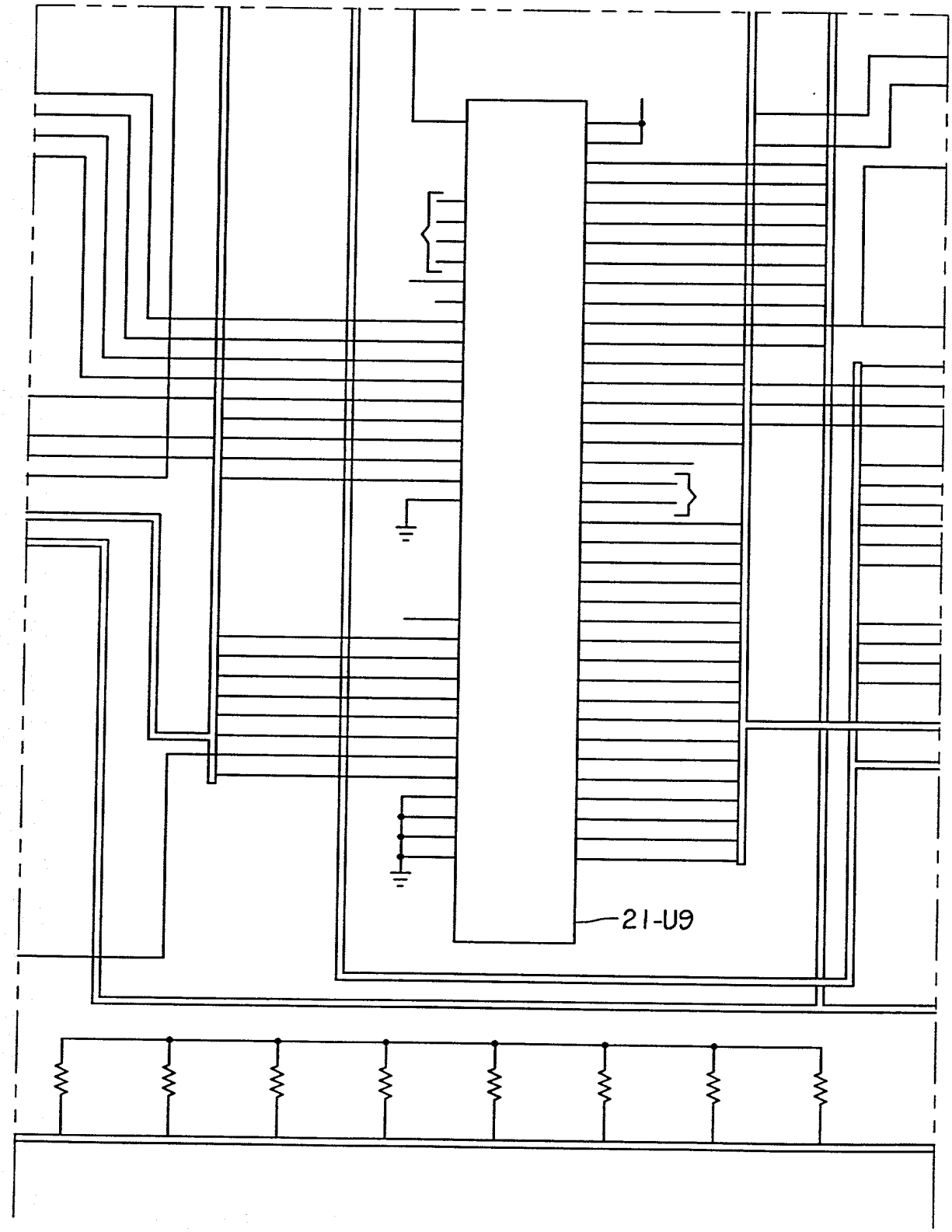
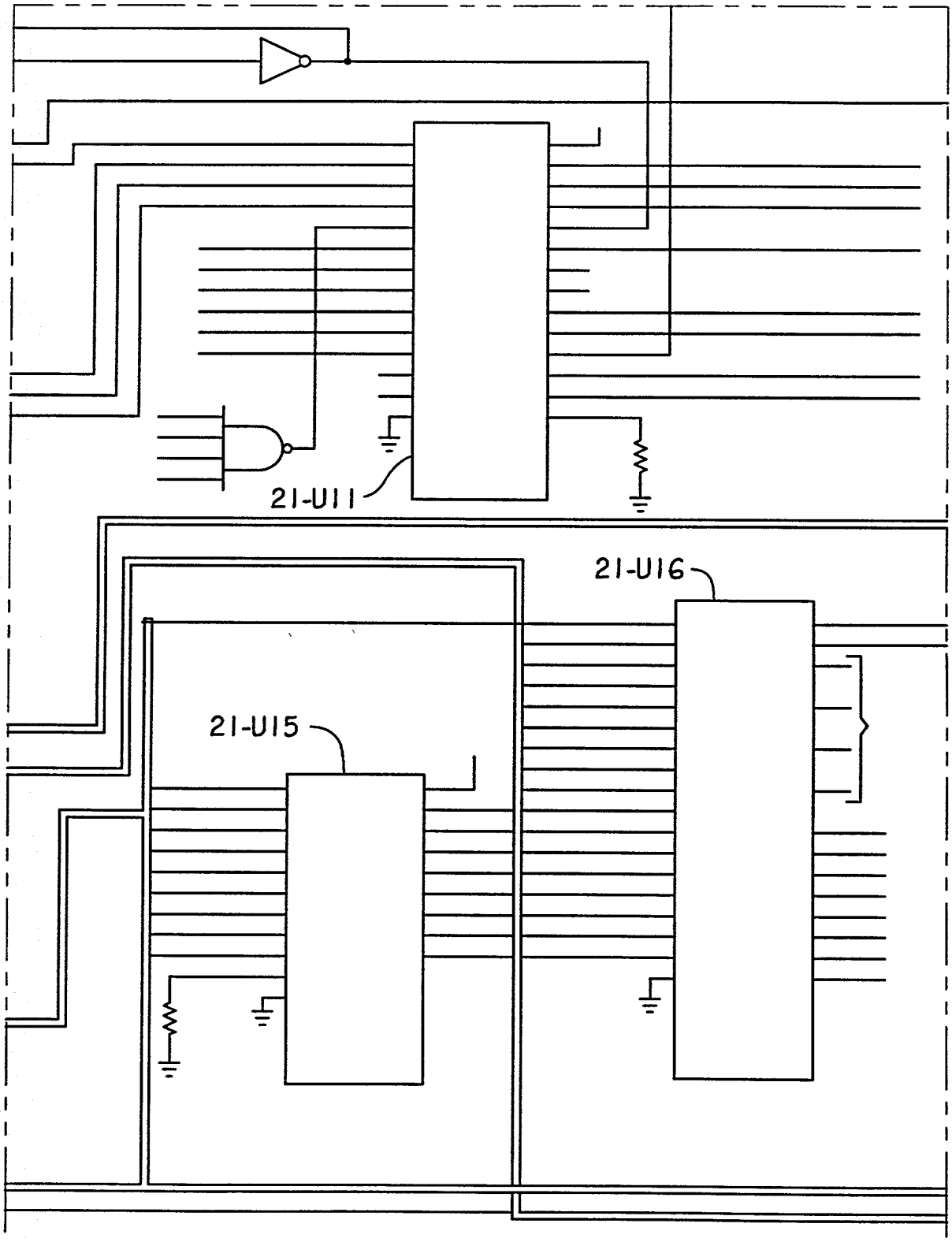


FIG. 44G



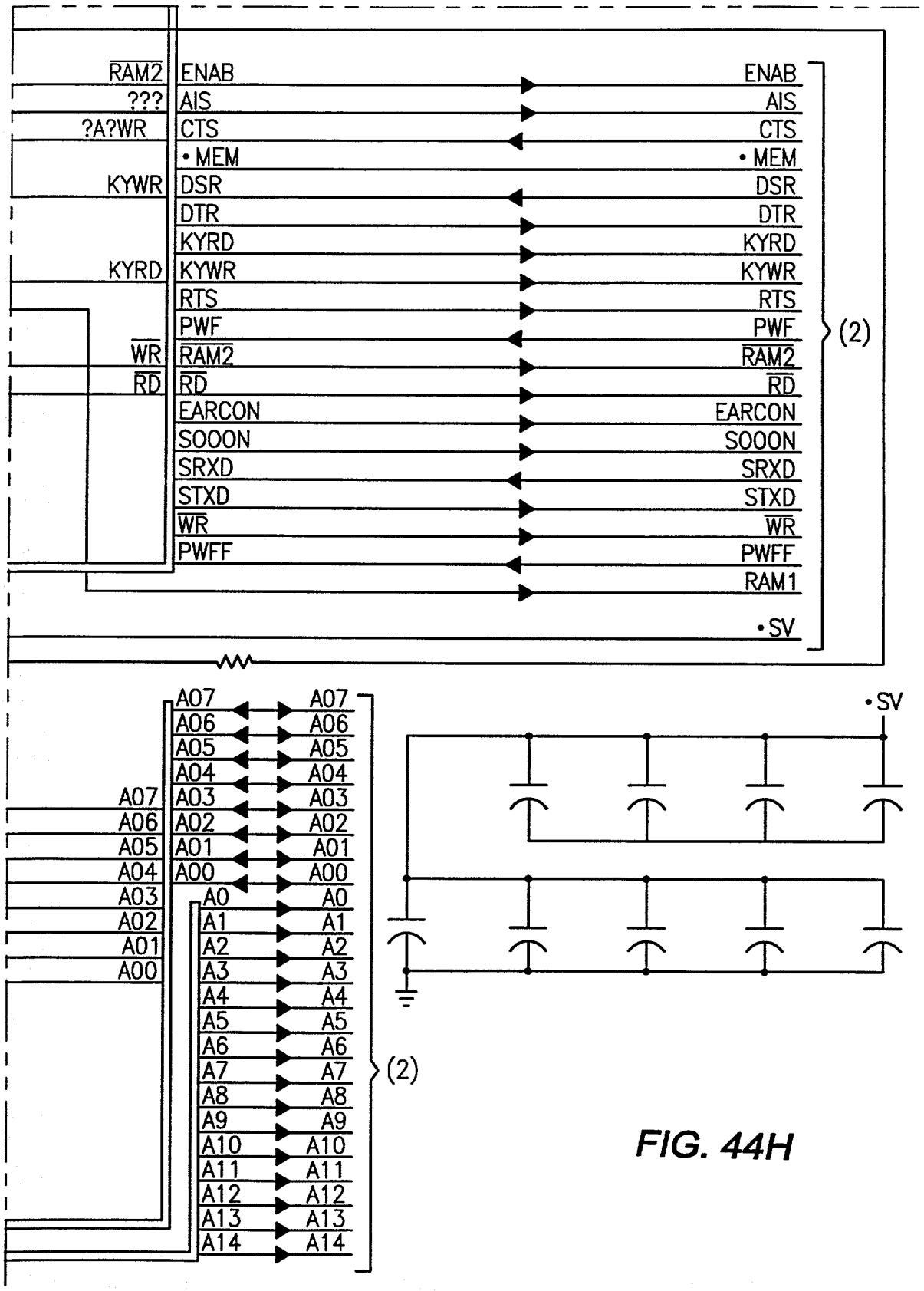

RAM2
???
?A?WR
KYWR
KYRD
WR
RD
ENAB
AIS
CTS
• MEM
DSR
DTR
KYRD
KYWR
RTS
PWF
RAM2
RD
EARCON
SOOON
SRXD
STXD
WR
PWFF
RAM1
• SV
(2)
A07
A06
A05
A04
A03
A02
A01
A00
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
A12
A13
A14
(2)
• SV

FIG. 44H

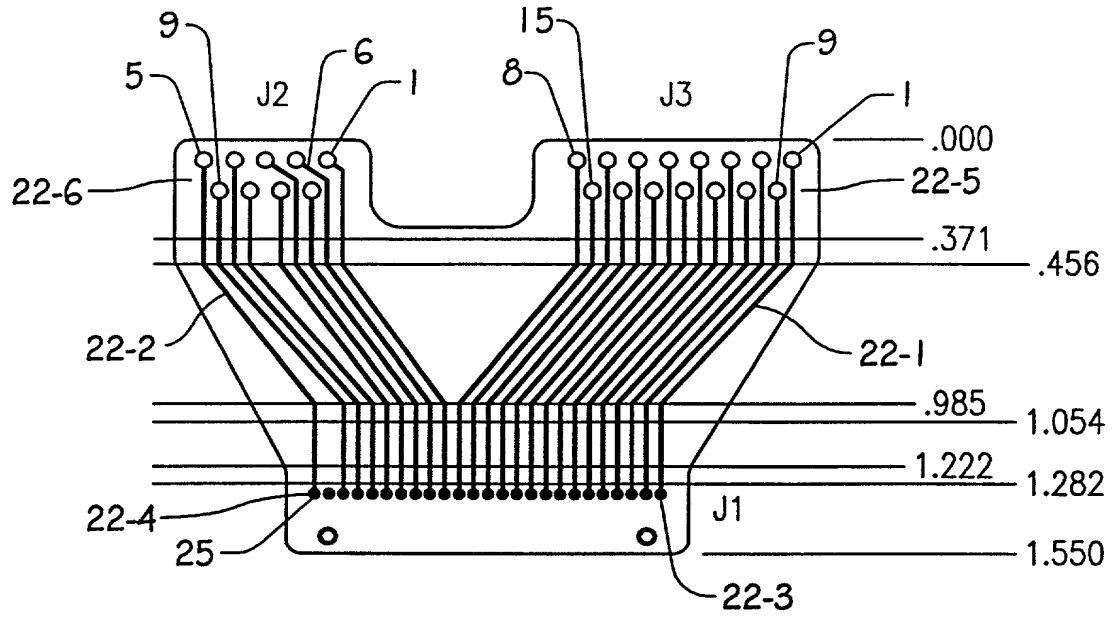


FIG. 45A

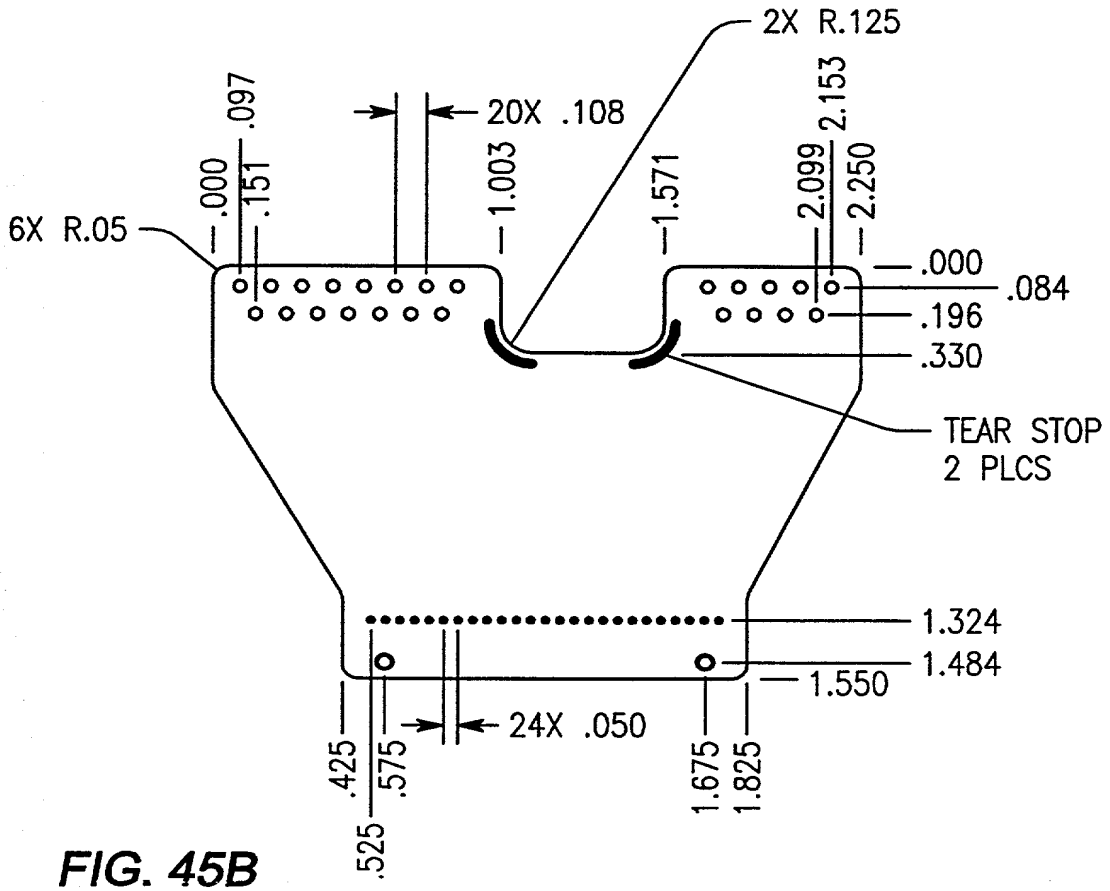


FIG. 45B

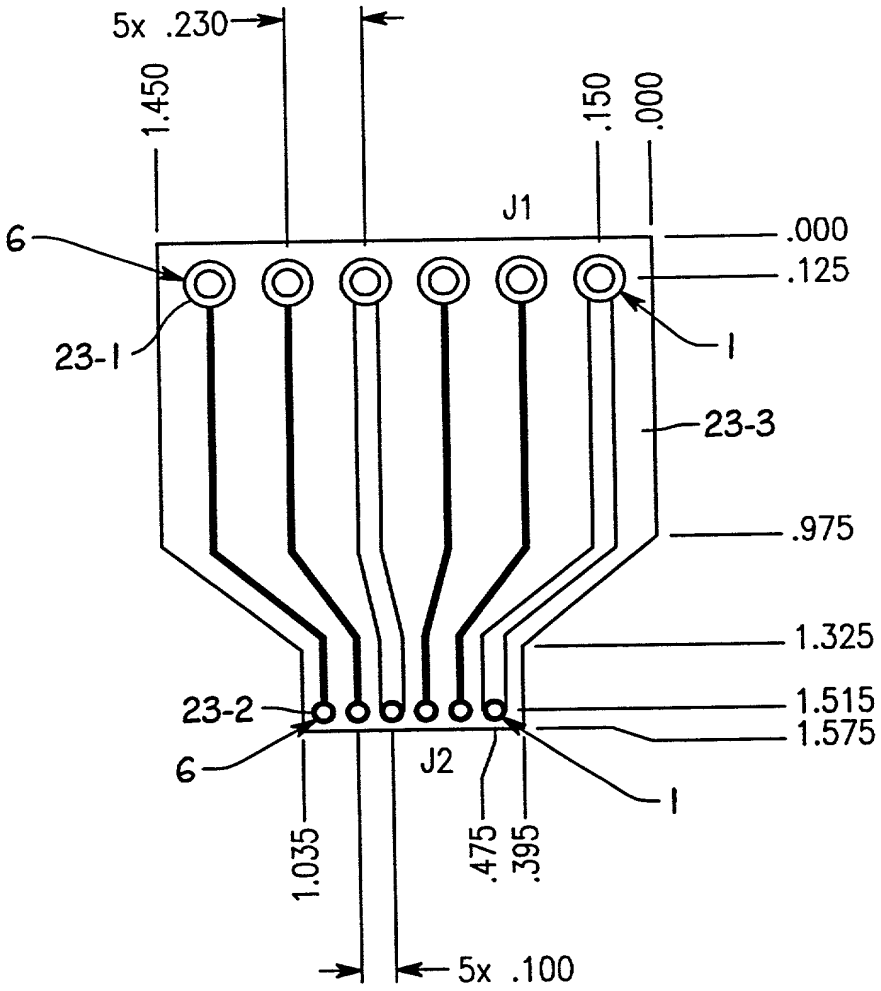

5x .230
1.450
.150
.000
J1
6
.000
.125
23-1
1
23-3
.975
1.325
23-2
1.515
1.575
6
J2
1
1.035
.475
.395
5x .100

FIG. 46

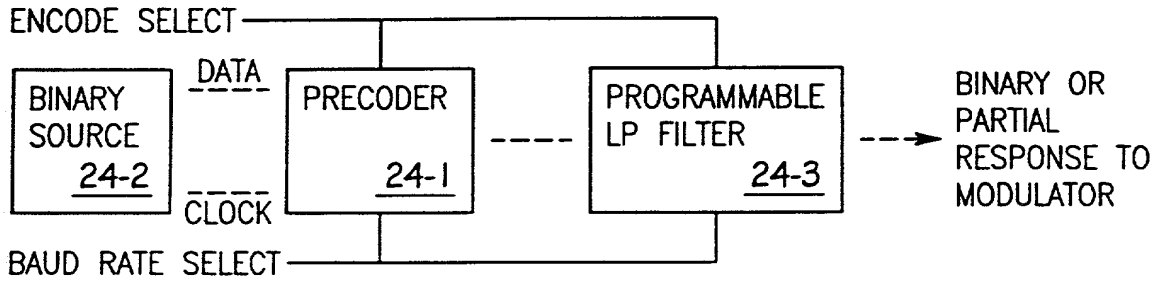

ENCODE SELECT
BINARY SOURCE 24-2
DATA
CLOCK
PRECODER 24-1
PROGRAMMABLE LP FILTER 24-3
BINARY OR PARTIAL RESPONSE TO MODULATOR
BAUD RATE SELECT

FIG. 47

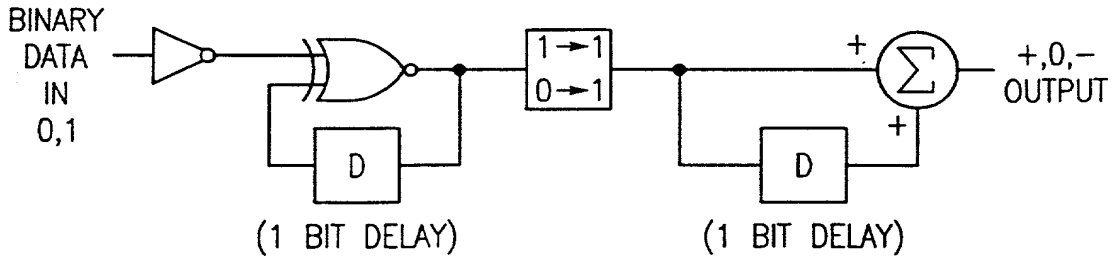

BINARY DATA IN 0,1
1→1
0→1
D
(1 BIT DELAY)
D
(1 BIT DELAY)
+
+
+,0,−
OUTPUT

FIG. 48

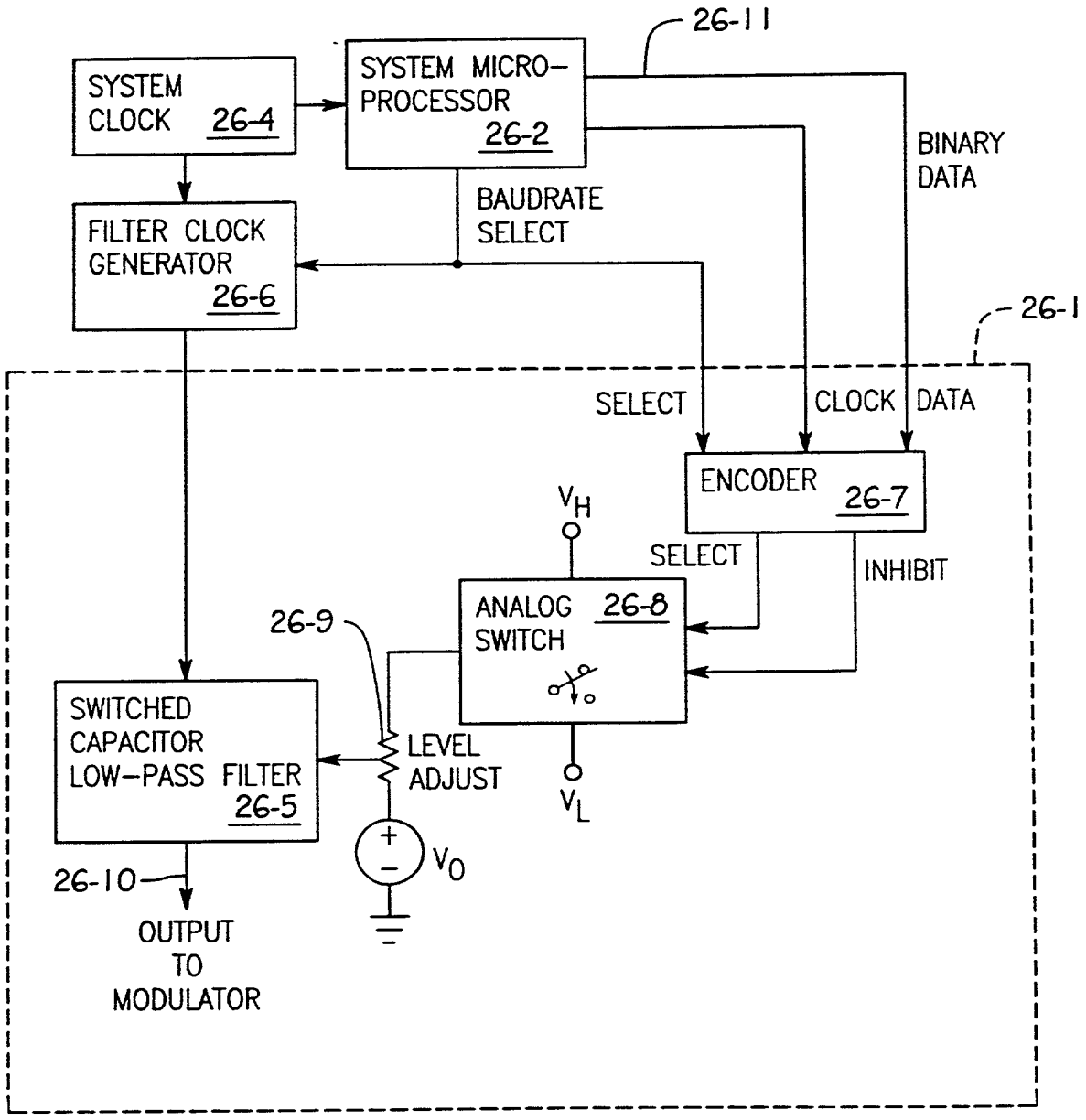

26-11
SYSTEM CLOCK 26-4
SYSTEM MICRO-PROCESSOR 26-2
BINARY DATA
BAUDRATE SELECT
FILTER CLOCK GENERATOR 26-6
26-1
SELECT
CLOCK
DATA
ENCODER 26-7
V_H
SELECT
INHIBIT
ANALOG SWITCH 26-8
26-9
SWITCHED CAPACITOR LOW-PASS FILTER 26-5
LEVEL ADJUST
V_L
V_O
26-10
OUTPUT TO MODULATOR

FIG. 49A

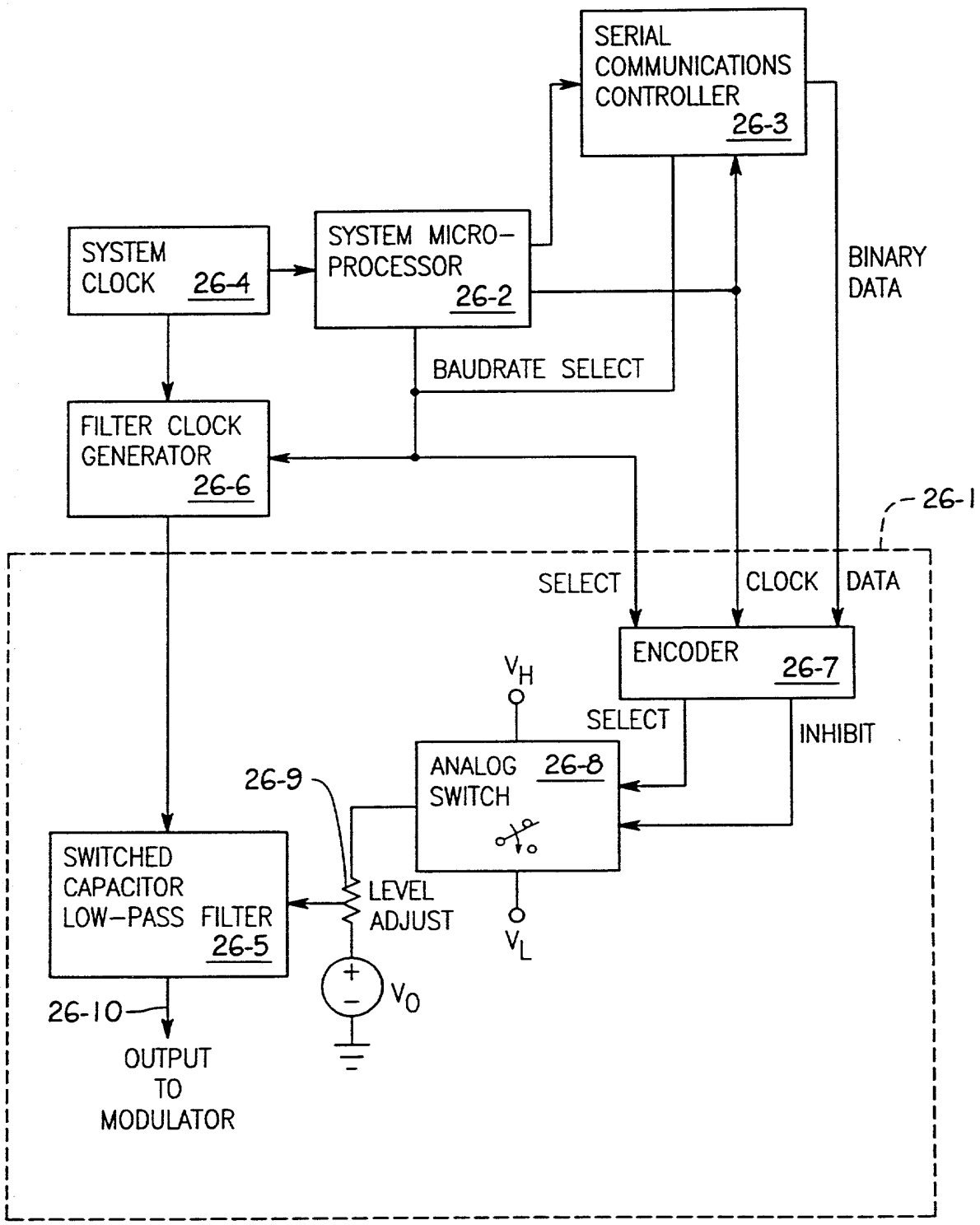

SERIAL COMMUNICATIONS CONTROLLER 26-3
SYSTEM CLOCK 26-4
SYSTEM MICRO-PROCESSOR 26-2
BINARY DATA
BAUDRATE SELECT
FILTER CLOCK GENERATOR 26-6
26-1
SELECT
CLOCK
DATA
ENCODER 26-7
V_H
SELECT
INHIBIT
26-9
ANALOG SWITCH 26-8
SWITCHED CAPACITOR LOW-PASS FILTER 26-5
LEVEL ADJUST
V_L
V_O
26-10
OUTPUT TO MODULATOR

FIG. 49B

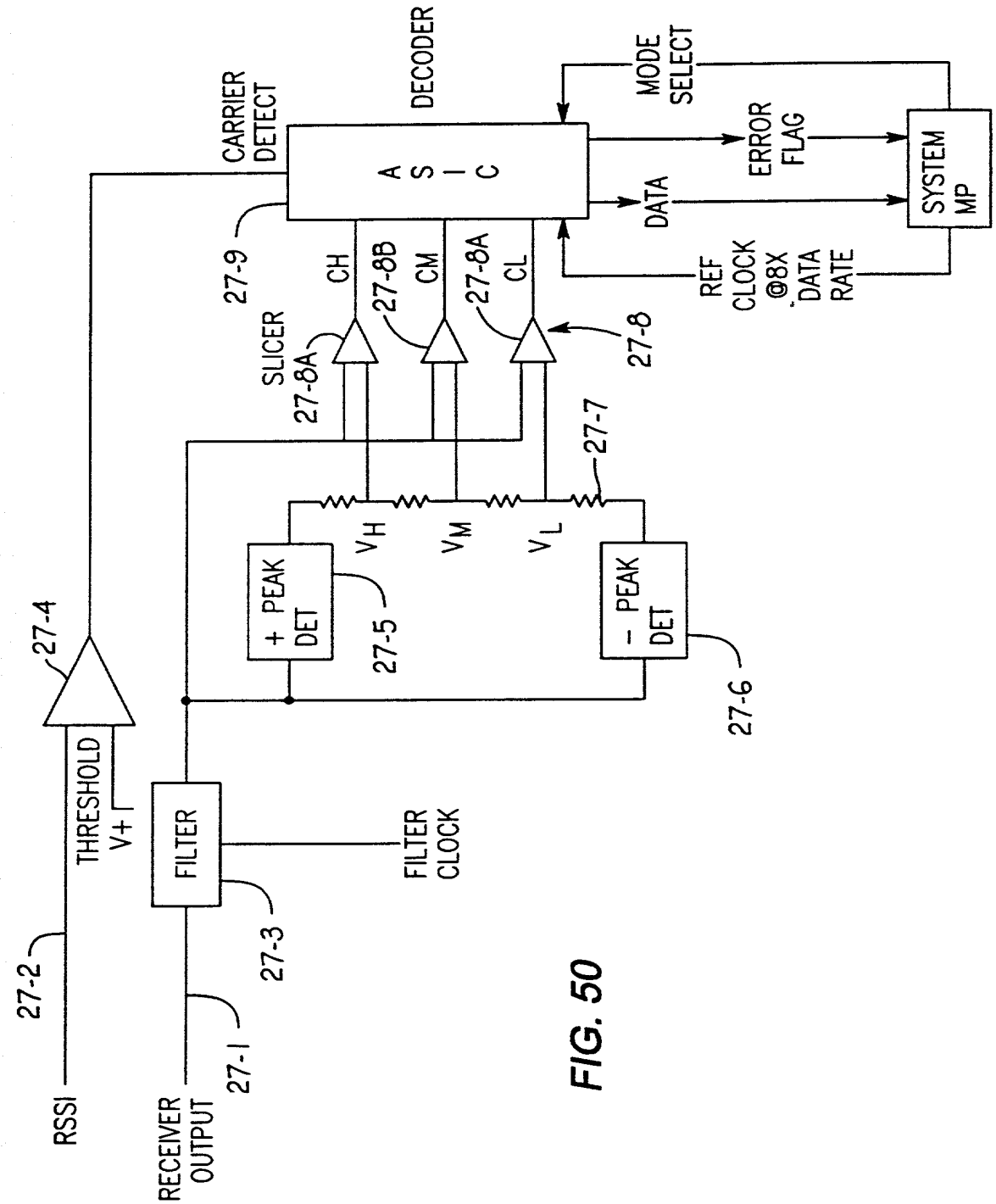

RSSI
RECEIVER OUTPUT
27-1
27-2
27-3
27-4
THRESHOLD V+
FILTER
FILTER CLOCK
+ PEAK DET
27-5
- PEAK DET
27-6
27-7
V_H
V_M
V_L
SLICER
27-8A
CH
27-8B
CM
27-8A
CL
27-8
27-9
CARRIER DETECT
DECODER
A S I C
MODE SELECT
ERROR FLAG
DATA
REF CLOCK @8X DATA RATE
SYSTEM MP

FIG. 50

FIG. 51A

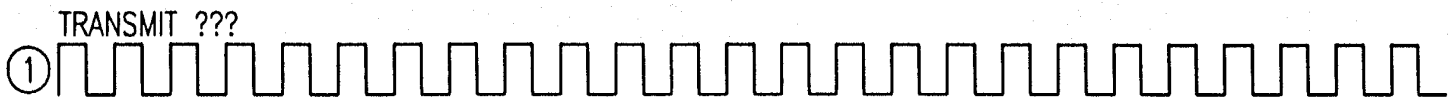


FIG. 51B

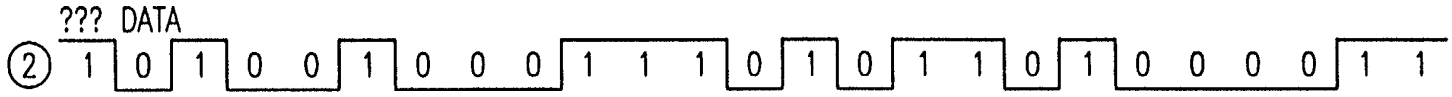


FIG. 51C

FIG. 51D

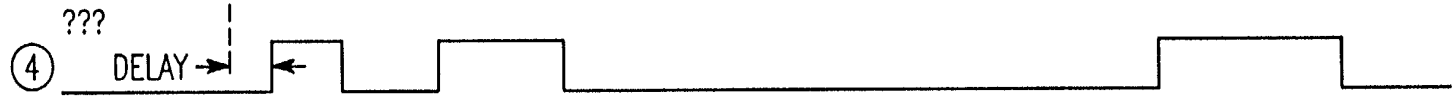


FIG. 51E

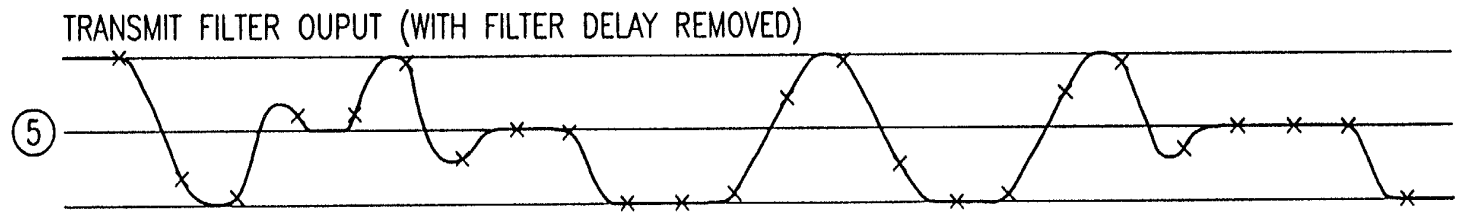


FIG. 51F

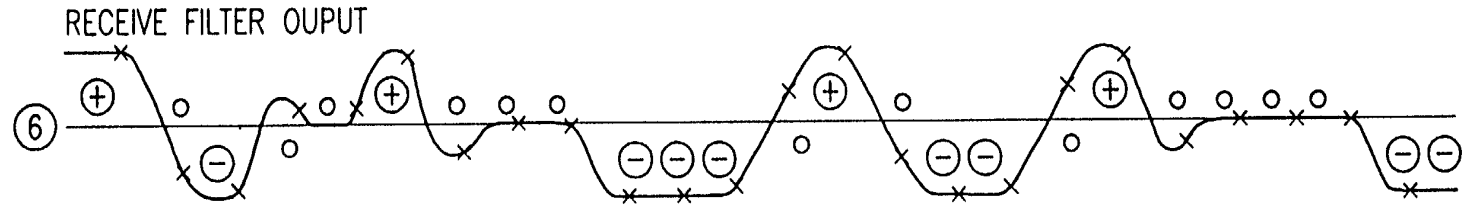
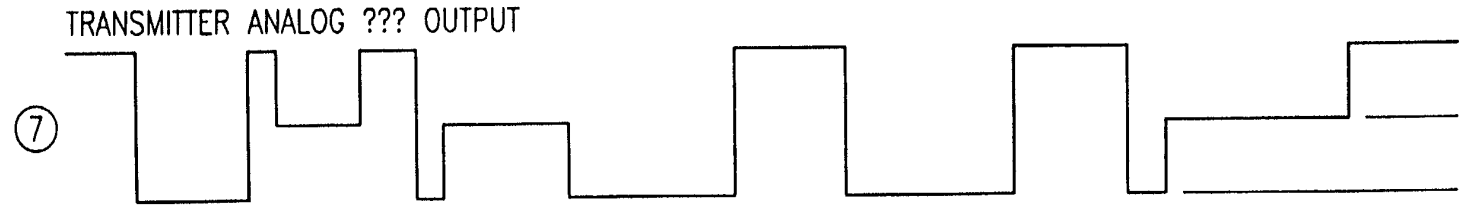


FIG. 51G



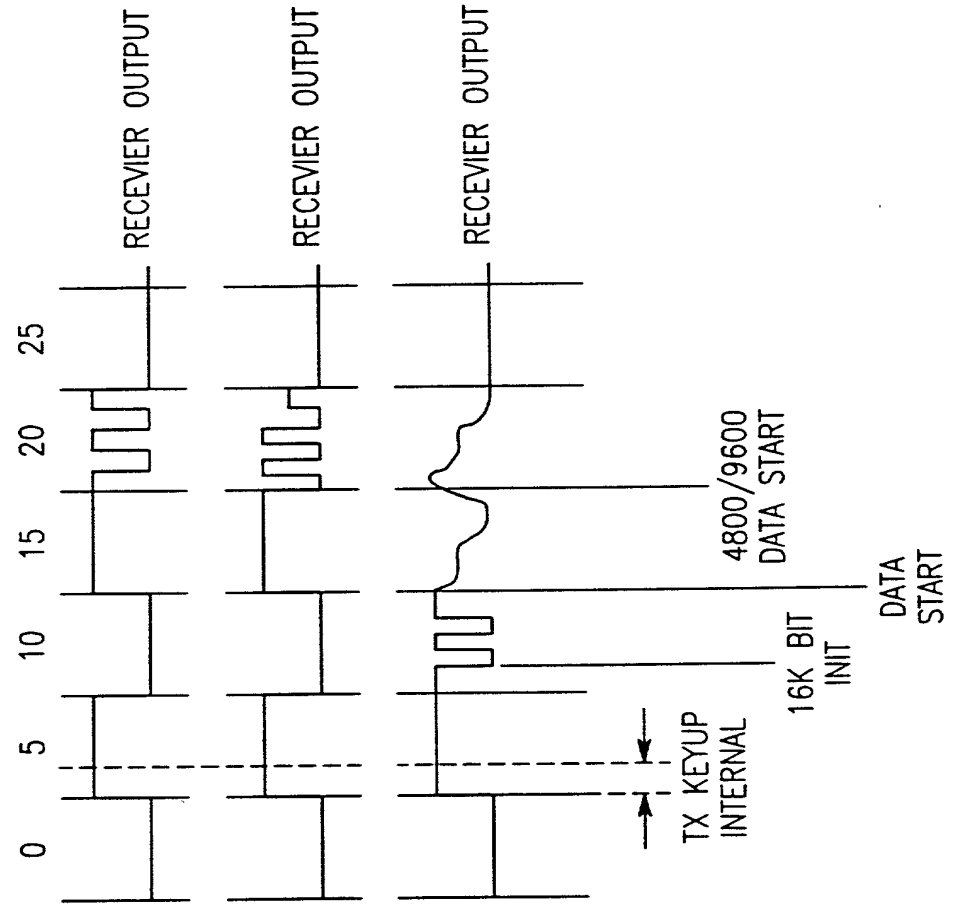


FIG. 52A

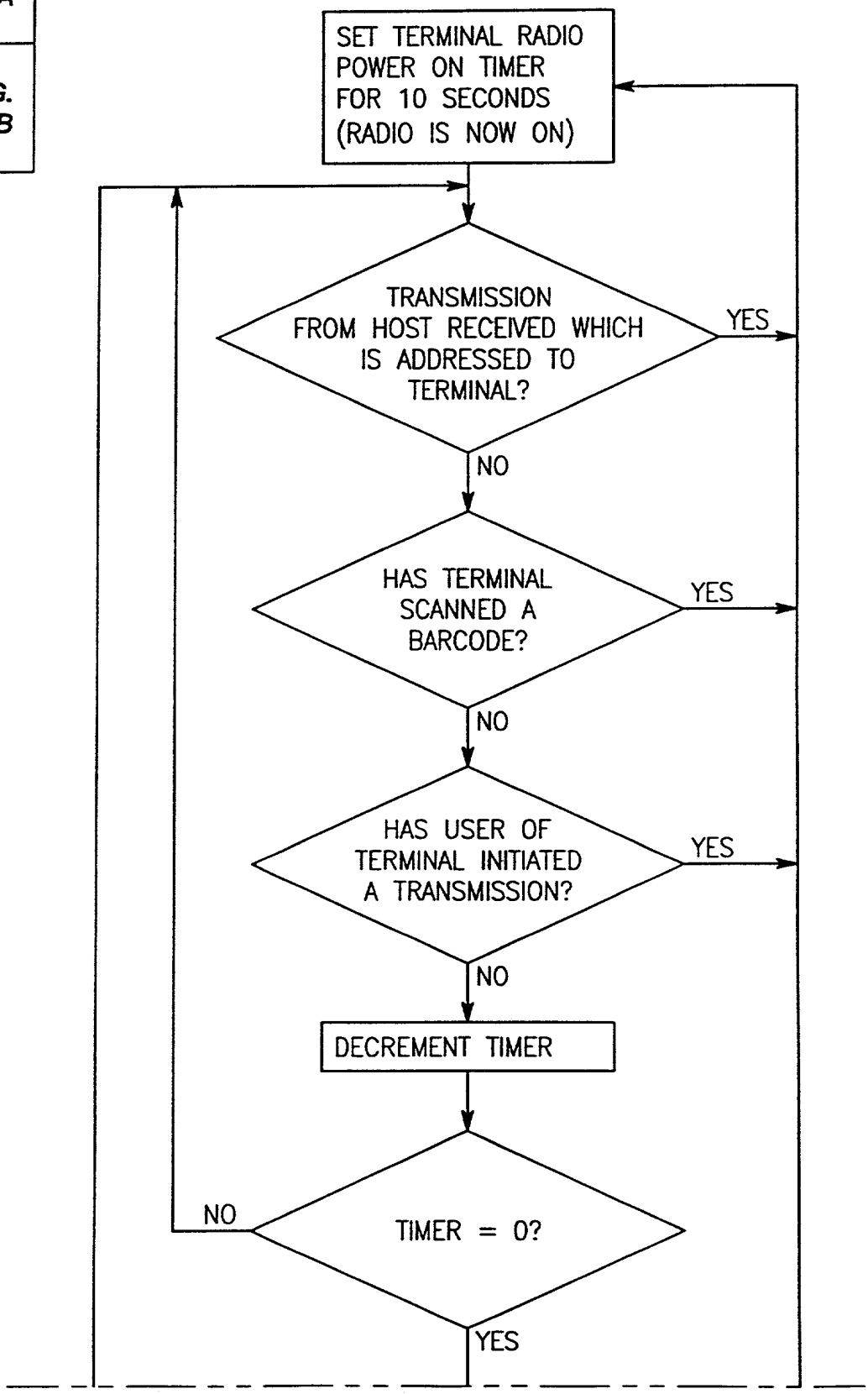
FIG. 52B

FIG. 52C

FIG. 53A

FIG. 53B

FIG. 53A



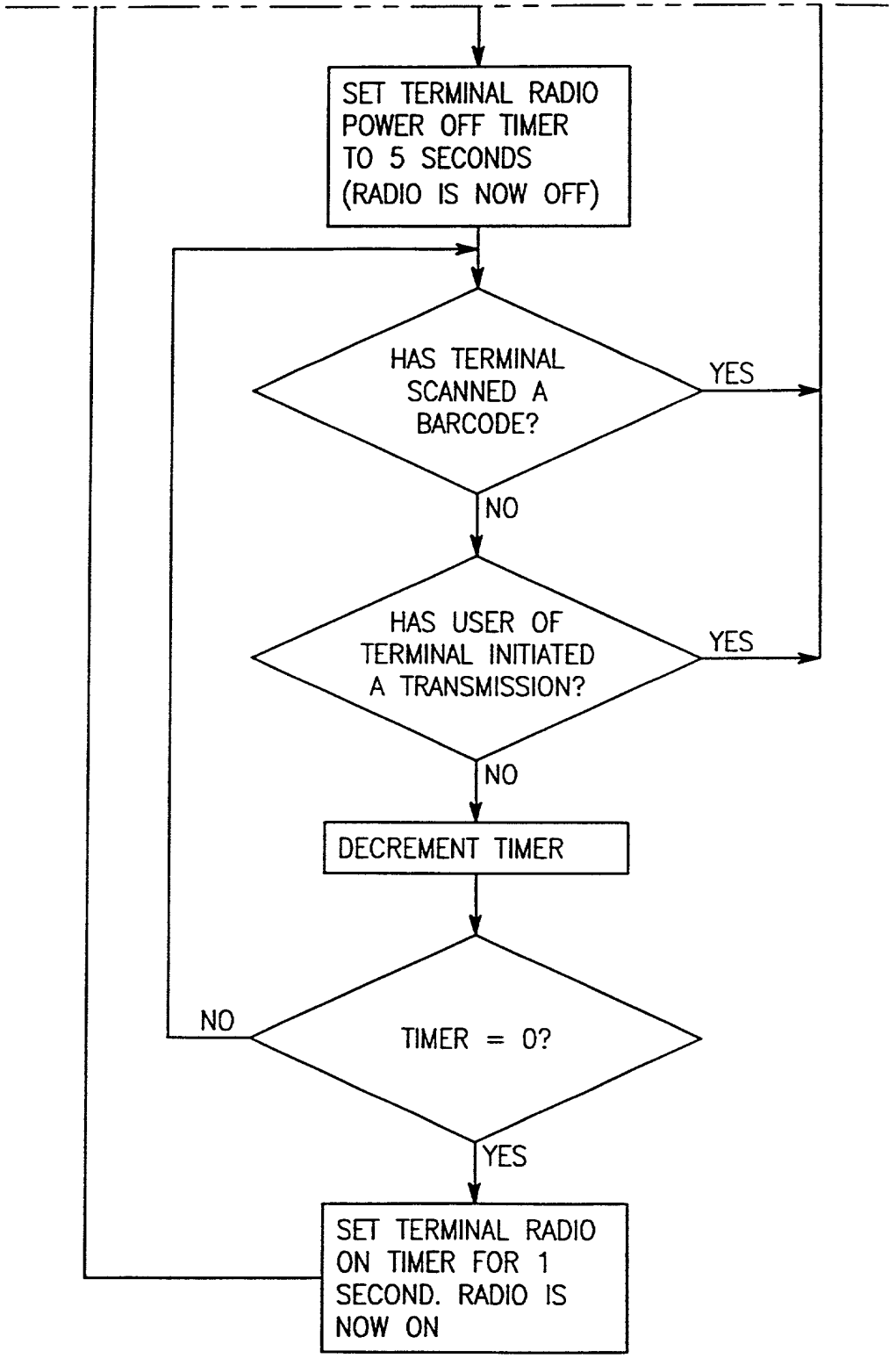

SET TERMINAL RADIO POWER OFF TIMER TO 5 SECONDS (RADIO IS NOW OFF)
HAS TERMINAL SCANNED A BARCODE?
YES
NO
HAS USER OF TERMINAL INITIATED A TRANSMISSION?
YES
NO
DECREMENT TIMER
TIMER = 0?
NO
YES
SET TERMINAL RADIO ON TIMER FOR 1 SECOND. RADIO IS NOW ON

FIG. 53B

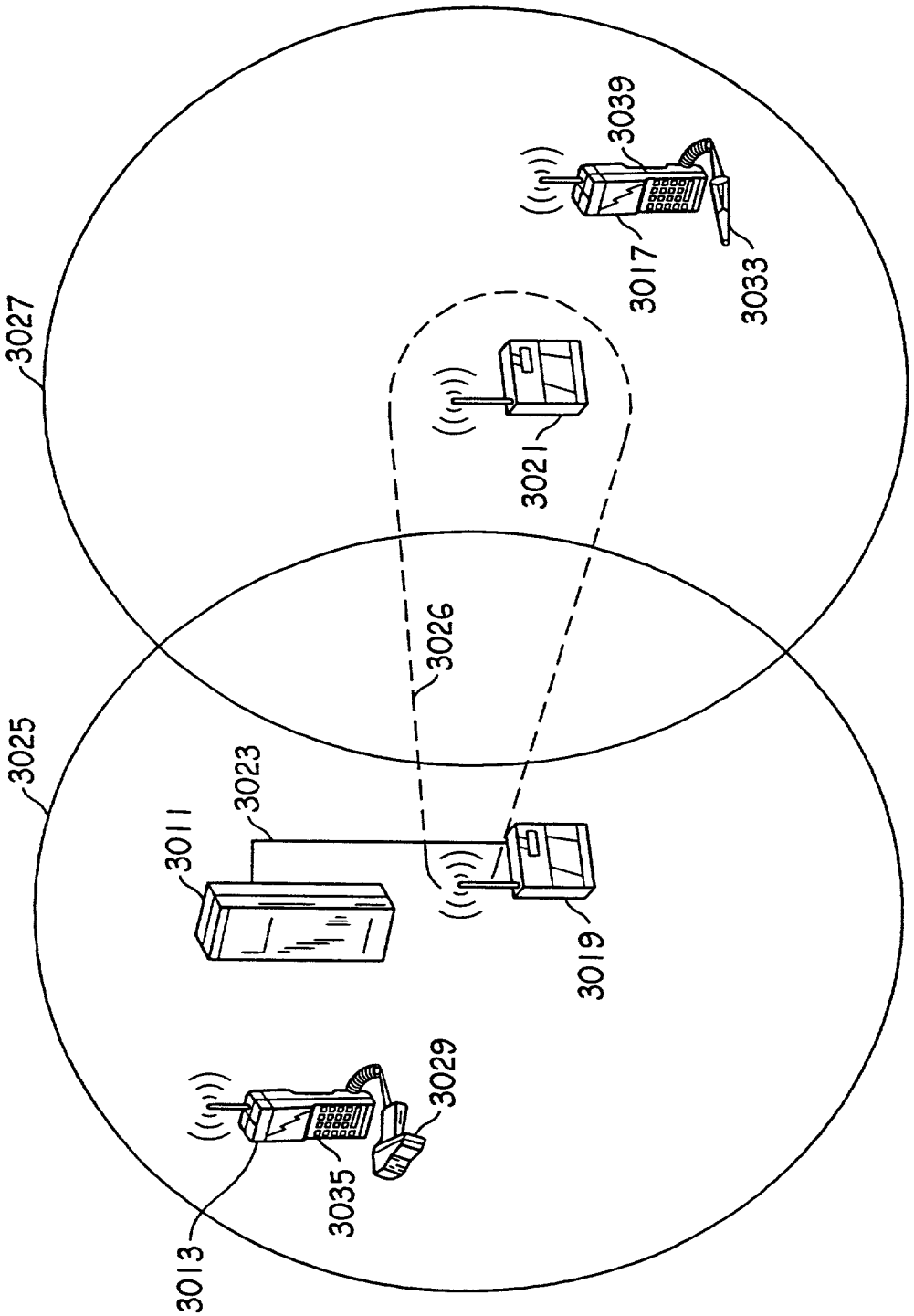

3027
3025
3026
3023
3011
3021
3039
3017
3033
3019
3029
3035
3013

FIG. 54

FIG. 55A

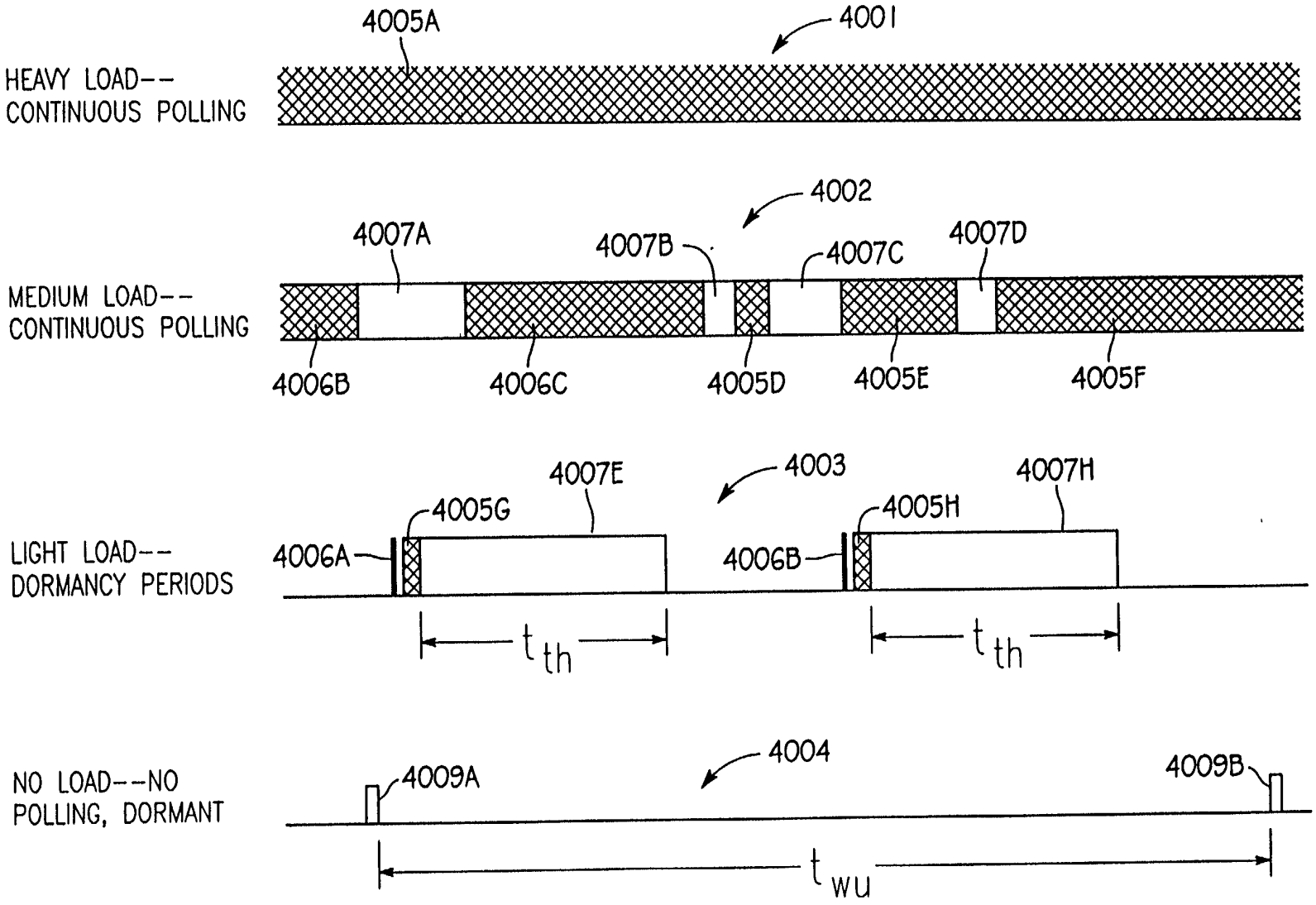

HEAVY LOAD--
CONTINUOUS POLLING
4005A
4001
MEDIUM LOAD--
CONTINUOUS POLLING
4002
4007A
4007B
4007C
4007D
4006B
4006C
4005D
4005E
4005F
LIGHT LOAD--
DORMANCY PERIODS
4007E
4003
4007H
4005G
4005H
4006A
4006B
t th
t th
NO LOAD--NO
POLLING, DORMANT
4004
4009A
4009B
t wu

FIG. 55B

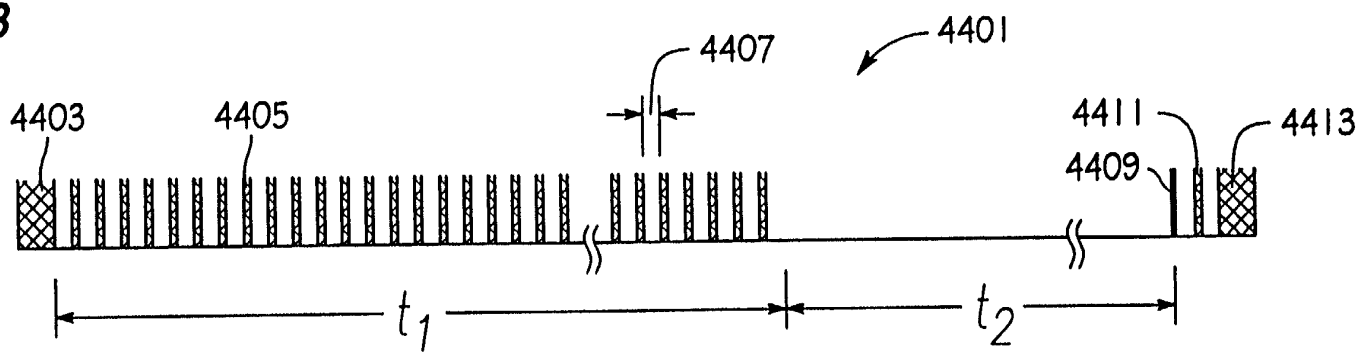


FIG. 55C